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AMERICAN

Cinematographer

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The Magazine of Motion Picture Photography

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PLUS: Industry News • Questions and Answers • What's New • Assignments

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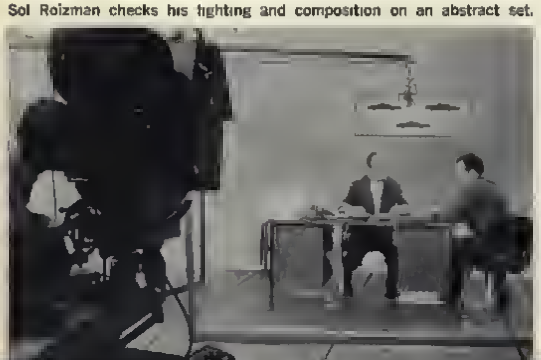
Sol Roizman checks his lighting and composition on an abstract set.



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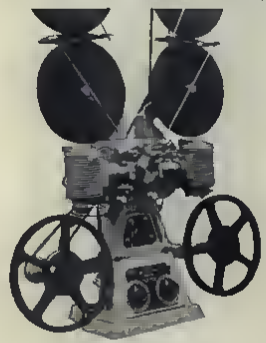

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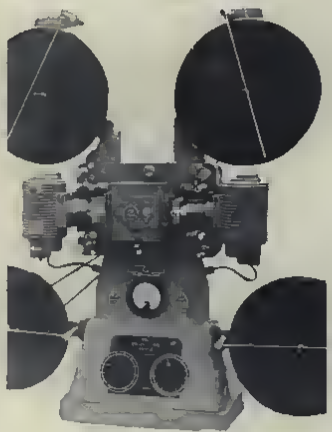

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Telephone: HOllywood 7-2135

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ON THE COVER

A montage of photos representing four important editorial features in this issue

AMERICAN CINEMATOGRAPHER, established 1920, is published monthly by the A.S.C. Agency, Inc., 1782 N. Orange Dr., Hollywood 28, Calif. SUBSCRIPTION: United States and Canada, $4.00 per year, Foreign (including Pan-American Union, $5.00 per year. Single copies 35 cents; back numbers 45 cents; foreign single copies, 45 cents; back numbers, 55 cents. Advertising rates on application. Copyright 1960 by A.S.C. Agency, Inc. Second-class postage paid at Los Angeles, California.

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WALTER STRENGE'S

QUESTIONS & ANSWERS

Need advice on a picture making problem? Your questions are invited and will be answered by mail. Questions and answers considered of general interest will appear in this column each month.

Q The most difficult problem I have when shooting fast action subjects is sighting through a conventional viewfinder, such as those on small, portable cameras. It is necessary for me to wear glasses at all times and this makes it difficult for me to get close enough to the finder eyepiece to obtain a clear view of the image or scene. Result is my shots are jerky, off-center, and I am invariably unable to locate a fast moving subject in the finder in time to photograph it. (My most recent experience: filming the Navy's Blue Angle aerial team demonstrating its flying skill).

What type finders are used by professional cinematographers to photograph fast action, especially where camera must be panned with the action?—*R.T.M.*

Answer: Bell & Howell Company makes a tracking finder that gives a magnified image. However, some modification probably would be necessary to adapt it to your camera.

Q In one of your past issues there was an article which told how the author coupled his camera and projector so as to re-photograph scenes by rear-projection. I have quite a lot of film I would like to copy and also add some optical effects in the process. My equipment consists of a Bolex H-16 camera with electric motor drive, three lenses plus a zoom lens, Bell & Howell magnetic-optical 16mm projector, tiller, tripods, closeup lenses, but no extension tubes.—*J.C.K.*

Answer: Among the many methods you may employ to achieve the results you aim for is to interlock your camera and projector. By means of a flexible shaft, connect the two so that the motor of the camera or the projector alone drives the combined equipment. An important factor is to set the shutters of both camera and the projector in the same position—either open or closed—before completing the interlock. By so doing, you will insure that the shutters of both machines will open and close simultaneously — highly important to successful rear-projection photography.

For your rear-projection screen, use a panel of opal glass of a size necessary to provide a projected picture of suitable size. Here, keep the image as small as possible consistent with your photographing equipment. This may be governed by the amount of light you may be able to get from your projector. Where the volume of light produced by the projector in motion is inadequate for a suitable exposure (for the copying process), the rear-projection photography can then be done a frame at a time to gain increased screen illumination.

Extension tubes may or may not be required. It will depend upon the picture size required on the glass screen. Avoid using short focus wide-angle lenses for this type work.

Q I am preparing to do some aerial photography in color, using a 35mm Bell & Howell camera and Eastman Color negative. How can I insure correct exposures? What filters, if any, should I use?—*R.P.*

Answer: Take a meter reading on bald blue sky, since any clouds that will be included in your shots will be the "hottest" areas in your pictures.

Three-quarter front cross-light is preferable for day shots, the reverse for night shots. When using Eastman Color film on exteriors, always use a 85-A filter on your lens. When making day-for-night shots (night effect shots filmed in daylight), combine a 60% non-graduated neutral density filter with the 85-A filter. This will reduce daylight exposure two stops and create the desired illusion of night.

Q Are tape splices affected by heat or cold?—*W.L.T.*

Answer: No more so than the film itself. ■

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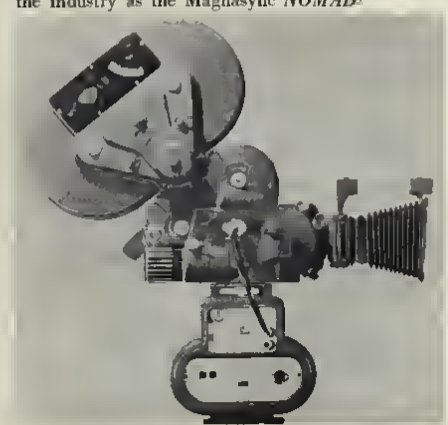

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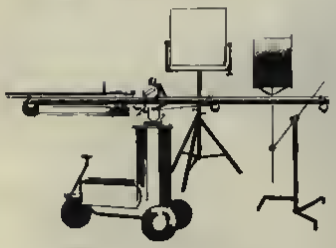

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Industry NEWS

SMPTE Convention Opens In Los Angales May 2nd

A General Session at 10 00 A.M., May 2nd, will officially open the 87th Semi-annual Convention of the Society of Motion Picture and Television Engineers at the Ambassador Hotel in Los Angales. Theme of the conclave is "New Techniques For Films, Television and Video Tape."

A major feature of the Convention will be an impressive exhibit by manufacturers and distributors of a wide range of equipment and accessories related to motion pictures and television.

★

West Coast SPSE Conference

Recent developments in photographic science will be on display at a technical exhibit at the 1960 National Conference of the Society of Photographic Scientists and Engineers at the Miramar Hotel, Santa Monica, Calif. May 9 to 13.

Technical papers at the five-day meeting will cover categories such as aerial photo reconnaissance, instrumentation, optics, film emulsions and processing, color, and motion pictures.

International interest in the conference is reflected in presentations by photographic authorities from Belgium, Canada, Garmany, Switzerland, and Japan.

★

Seminar On Film Animation

The Florman & Babb Animated Film Seminar will be conducted at the New York Trade Show Building, 500 Eighth Ave., New York City, beginning Sunday, June 12th and concluding Wednesday, June 15th. Participating in the four-day seminar will he such noteworthy New York animation industry figures as Peter Cooper, Irving Scheib, Mary Ellen Bute, and Ernest M. Pittaro.

There is no charge for Seminar attendance, although registration with Florman & Babb, 68 West 45th St., New York, is requested.

★

Trade Notes—

Hollywood Film Company announces plans for branch office in Chicago, including warehouse and showroom . . . **Walter G. Eggers** veteran film laboratory technician has been appointed Vice-president of **Movielab Color Corp.**, New York. **Milton Formaa**, General Manager of **Natural Lighting Corp.**, makers of Color-Trans, has been upped to Vice-president of the Burbank, Calif. company . . . **Camera Equipment Co.**, New York, announces opening of its west coast offices and warehouse at 6510 Santa Monica Blvd., Hollywood, under management of **Jack Pill** . . . **Florman & Babb, Inc.**, New York, has acquired the professional industrial and still photography equipment division of **Advance Camera Corp.** •

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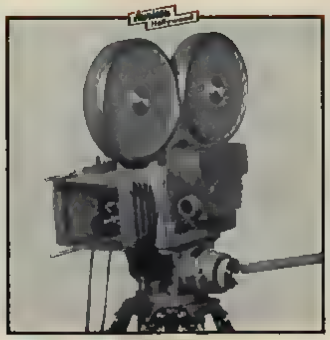

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Cinekad Engineering Co., 763 10th Ave., New York, announces a new, improved car top tripod clamp Made of cast bronze and finished in crackle enamel, the tie down screw is brass. The clamps are designed to accept leg-tips of any standard motion picture or TV tripod

Magnetic Reproducer

Greg, Box 11, Eastside Station, Binghamton, N. Y., offers a magnetic reproducer unit for adapting 16mm optical sound projectors to magnetic sound. Unit may be installed without altering projector The head of unit scans film sound track at the standard point of 28 frames ahead of the picture frame in gate. It has an impedance of 100 ohms, an inductance of 12 millihenries, and a gap of .0005". ■

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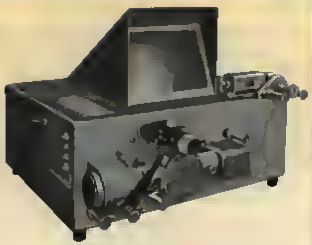

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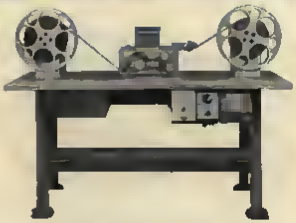

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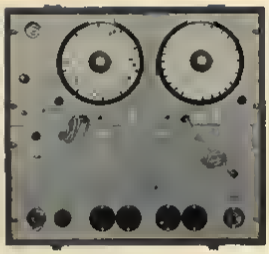

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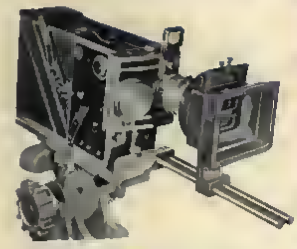

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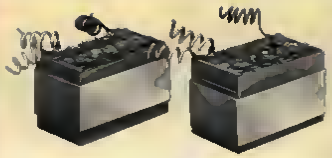

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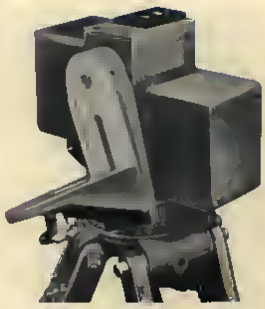

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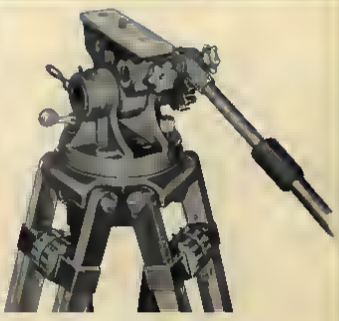

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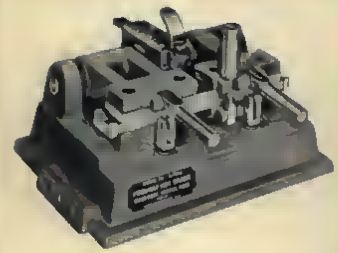

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PHOTOGRAPHIC ASSIGNMENTS

What the industry's cameramen were shooting last month

By MARION HUTCHINS

ACADEMY STUDIOS

FLOYD CROSBY, ASC, "A Cold Wind in August" (Troy Films) with Lola Albright and Scott Marlowe. Alexander Singer, director.

ALLIED ARTISTS

BURNETT GUFFEY, ASC, "Hell to Eternity" (Atlantic Pictures Prod., shooting on Okinawa) with Jeffrey Hunter and David Jansen. Phil Karlson, director.

AMERICAN NATIONAL

CURT FETTERS, "Tombstone Territory"* (Ziv-TV) with Pat Conway

MONROE ASKINS, "This Man Dawson"* (Ziv TV) with Keith Andes

RICHARD RAWLINGS, "Seas Market"* (Pilot; Ziv-TV)

WILLIAM WHITLEY, ASC, "Men Into Space"* (Ziv TV) with Bill Lundigan

CASCADE PICTURES

ELWOOD BREDELL, ASC, Commercials*

WILLIAM SKALL, ASC, Commercials*

COLUMBIA

JOSEPH BIROC, ASC, FRED GATELY, ASC, "Alcoa Goodyear Theatre"* (Screen Gems.).

HENRY FREULICH, ASC, "Dennis the Menace"* (Screen Gems) with Gloria Henry and Herbert Anderson.

MIKE ELLIOTT, Commercial* (Screen Gems).

OSWALD MORRIS, "The Guns of Navarone" (Color, Highroad Prod.; shooting in Greece) with Gregory Peck and David Niven. Alexander Mackendrick, director.

CHARLES LAWTON, JR., ASC, "The Wackiest Ship in the Army" (CScope & Color, Fred Kohlmar Prods. shooting in Hawaii) with Jack Lemmon and Ricky Nelson. Richard Murphy, director

JOE MACDONALD, ASC, "Pepe" (George Sidney Int'l Posa Prods.; CinemaScope & Color) with Cantinflas, Dan Dailey and Shirley Jones. George Sidney, producer-director.

IRVING LIPPMAN, "Manhunt"* (Screen Gems) with Victor Jory and Patrick McVey. Fred Jackman, director.

CHARLES WELBORN, "Tightrope"* (Screen Gems) with Michael Connors.

GERT ANDERSEN, ASC, "Donna Reed Show"* (Screen Gems) with Donna Reed. Oscar Rudolph, director.

PHILIP TANNURA, ASC, "Man from Blackhawk"* (Screen Gems) with Robert Rockwell.

DESILU STUDIOS—Culver City

HARKNESS SMITH, "Pony Express"* (Desilu Prods.) Jean Yarborough, director.

DESILU STUDIOS—Gower

ROBERT HALSER, "Three Wishes"* (Pilot; Desilu Prods.). Andrew McCullough, director.

ROBERT PLANCK, ASC, "The Millionaire"*. James Sheldon, director.

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PHOTOGRAPHIC ASSIGNMENTS

Continued From Preceding Page

CHARLES STRAUMER, "The Untouchables"* (Desilu Prods.) with Robert Stack and Jerry Paris.

ROBERT PITTACK, ASC, "Ann Sothern Show"* (Desilu Prods.) with Ann Sothern.

DESILU STUDIOS—Hollywood

NICK MUSURACA, ASC, "Westinghouse-Desilu Playhouse"* (Desilu Prods.). Earl Bellamy, director

ROBERT DE GRASSE, ASC, "Danny Thomas Show"* (Desilu Prods.) with Danny Thomas, Sheldon Leonard, director

GENERAL SERVICE STUDIOS

HAROLD LIPSTEIN, ASC, "Adventures of Ozzie & Harriet"* (Stage 5 Prods.) with Ozzie, Harriet, David and Rickey Nelson Ozzie Nelson, director

FRANK REDMAN, ASC, "Perry Mason"* (CBS-TV) with Raymond Burr and Barbara Hale

HAL MOHR, ASC, Commercials* (Filmways Prods.).

THOMAS TUTWILER, ASC, Commercial* (Filmways Prods.).

ARTHUR ARLING, ASC, Commercials* (Filmways Prods.).

TED MCCORD, ASC, Commercial* (Filmways Prods.).

GOLDWYN STUDIOS

NORBERT BRODINE, ASC, EUGENE POLITO, "Loretta Young Show"* (Toreto Prods.) with Loretta Young

INDEPENDENT

CLIFFORD POLAND, "Force of Impulse" (Gayle, Swimmer, Anthony Prods. for U A release, shooting in Florida) with J. Carrol Naish and Robert Alda. Saul Swimmer, director.

CHARLES LANG, JR., ASC, "The Magnificent Seven" (Panavision & Color; shooting in Mexico) with Yul Brynner and Eli Wallach John Sturges, producer-director

ARTHUR FEINDEL, ASC, "Studs Lonigan" (Longridge Ent. for UA) with Christopher Knight and Venetia Stevenson Irving Lerner, director

KEYWEST STUDIOS

WALTER STRENGE, ASC, Series of religious films* (Family Films) Edward Dew, director

METRO-GOLDWYN-MAYER

PHILIP LATHROP, "Peter Gunn"* (Spartan Prods.) with Craig Stevens and Lola Albright

KIT CARSON, "Brothers Brannagan"* with Steve Dunne and Mark Roberts.

ROBERT BRONNER, ASC, Commercials.*

JOSEPH RUTTENBERG, ASC "Butterfield 8" (Afton-Linebrook Prod.; shooting in N.Y.) with Elizabeth Taylor and Laurence Harvey. Daniel Mann, director.

MILTON KRASNER, ASC, "Go Naked in the World" (Arcola Prod.) with Gina Lollobrigida and Anthony Franciosa. Ranald MacDougall, director.

GEORGE CLEMENS, ASC, "Twilight Zone"* (CBS-TV).

GEORGE FOLSEY, ASC, Commercials*.

N.B.C.

ALAN STENSVOLD, ASC, "You Bet Your Life"* with Groucho Marx, Bob Dwan and Bernie Smith, directors.

PARAMOUNT

ROBERT BURKS, ASC, "The Pleasure of His Company" (Technicolor, Perlberg-Seaton Prod.) with Fred Astaire and Debbie Reynolds. George Seaton, director

TED SCAIFE, "Tarzan the Magnificent" (Shooting in Nairobi, Africa) with Gordon Scott and Jock Mahoney, Robert Day, director.

PARAMOUNT SUNSET STUDIOS

FLEET SOUTHCOTT, "Gunsmoke"* with James Arness and Dennis Weaver.

REPUBLIC STUDIOS

RUSSELL METTY, ASC, "Midnight Lace" (Color, Arwin Prods.) with Doris Day and Rex Harrison David Miller, director

CHRIS CHALLIS, "The Grass is Greener" (Grandon Prods., shooting in England) with Cary Grant and Deborah Kerr Stanley Donen, director

GEORGE DISKANT, ASC, "Johnny Ringo"* (Four Star Prods.) with Don Durant.

CARL GUTHRIE, ASC, "College Confidential" (Albert Zugsmith Prod.) with Steve Allen and Jayne Meadows. Albert Zugsmith, producer-director

HOWARD SCHWARTZ, "The Rifleman"* (Four Star Prods.) with Chuck Connors and Johnny Crawford.

EMMETT BERGHOLZ, "Death Valley Days"* (Filmaster Prods.)

REVUE STUDIOS

JOHN RUSSELL, ASC, WILLIAM SICKNER, ASC, "The Deputy"* (Revue Prods.) with Henry Fonda

WILLIAM SICKNER, ASC, JOHN RUSSELL, ASC, ELLIS THACKERY, ASC, "Overland Trail"* (Revue Prods.).

BENJ KLINE, ASC, RAY COBY, ASC, JOHN WARREN, ASC, RAY RENNAHAN, ASC, "M Squad"* (Latimer Prods.) with Lee Marvin.

LIONEL LINDON, ASC, RAY RENNAHAN, ASC, "Markham"* (Revue Prods.) with Ray Milland.

JACK MACKENZIE, ASC, RAY RENNAHAN, ASC, "Laramie"* (Revue Prods.)

ELLIS THACKERY, ASC, "Love and War"* (Revue Prods.) "General Electric Theatre"* (Revue Prods.) "Slowest Gun in the West"* (Pilot, Revue Prods.).

RAY RENNAHAN, ASC, NEAL BECKNER, "Coronado 9"* (Revue Prods.).

RAY RENNAHAN, ASC, JOHN WARREN, ASC, FMII HARRIS, RAY FLIN, "Shotgun Slade"* (Revue Prods.).

LIONEL LINDON, ASC, "The Lawyer"* Review Prods.).

JOHN RUSSELL, ASC, JOHN WARREN, ASC, "Alfred Hitchcock Presents"* (Revue Prods.).

RAY CORT, ASC, "Bachelor Father"* (Bachelor Prods.) with John Forsythe, "Johnny Midnight"* (Revue Prods.).

WILLIAM SICKNER, ASC, "Overland Trail"* (Revue Prods.).

BENJ. KLINE, ASC, "Wagon Train"* (Revue Prods.) with Ward Bond.

EMIL HARRIS, "Riverboat"* (Revue Prods.) with Darren McGavin

Continued on Page 324

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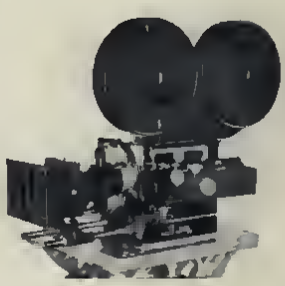

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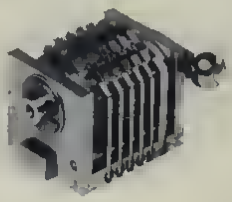

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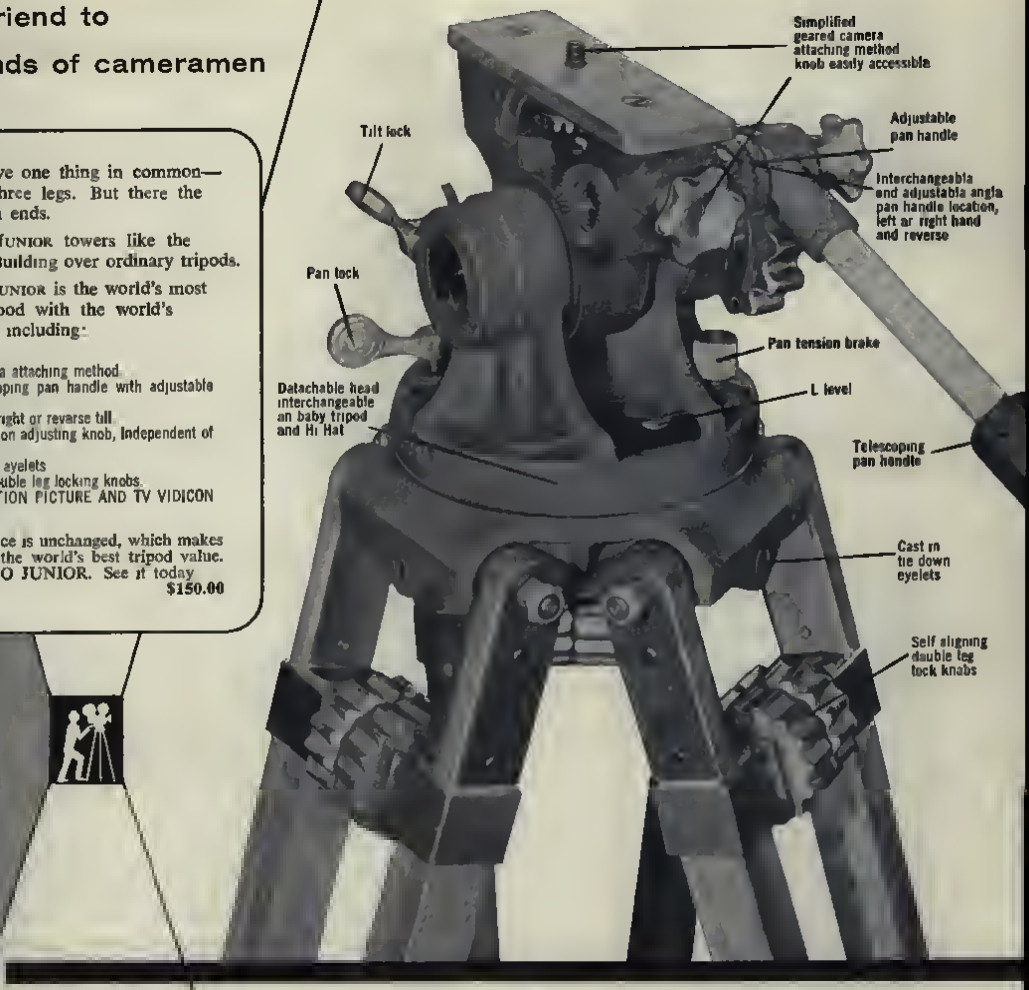
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Lee Garmes Elected President Of The A. S. C. For 1960-61

ON THE NATIONAL scene there is some question as to whether a Vice-president can become President. In Hollywood, it became a reality last month

LEE GARMES

when Lee Garmes, elected last year as 1st Vice-president of the American Society of Cinematographers, was elected President of the Hollywood cameramen's organization.

Fifteen year's service on the ASC's Board of Directors in various capacities has well-qualified Garmes to serve his fellow cameramen as head of their 41-year-old organization, oldest craft society in the industry.

A biographer once said of Garmes, "He is a man who refuses to be satisfied with success. He believes you are going backward if you are not moving forward."

Garmes, born in Peoria, Ill. in 1893, moved to California in 1906, landed his first job at the old Thomas Ince Studio, as prop boy. Quick to make friends, cameraman John Lee took a liking to him, started teaching him something about photography, later made him his assistant.

Garmes' first significant photographic assignment as full-fledged cinematographer was photographing "The Grand Duchess and the Waiter," starring Adolph Menjou. He is said to be the first Hollywood cameraman to use mazda bulbs for lighting in place of arcs.

In 1932 he won his first Academy Award for the photography of Paramount's "Shanghai Express." He came close to winning his second Oscar this year when his exceptional color photography of "The Big Fisherman" was among the nominees for Best Achievement in Color Photography.

Between picture assignments, Garmes practices his success formula on his avocado ranch in Fallbrook, Calif., considered one of the most productive in the state. He frequently supplies avocados for the ASC's monthly dinner meetings, like the one given May 25th, when he was inducted into office. (More about this, plus pictures, next month.)

Coincident with President Garmes' election, Hal Rosson was elected 1st Vice-president; William Daniels, 2nd Vice-president; Joseph Biroc, 3rd Vice-president; Charles Clarke, Secretary, and Victor Milner, Sergeant-at-arms. Outgoing President Walter Strenge was elected Treasurer.

New Board of Directors members for 1960-61 are: Arthur Edeson, Daniel Fapp, George Folsey, Burnett Guffey, Sol Halprin, Ray Rennahan, John Seitz, and Philip Tannura.

Alternate Board Members elected are: John Arnold, Harold Lipstein, Farciot Edouart, Virgil Miller, Paul Vogel, James Van Trees, Charles Salerno, Lucien Ballard, Gilbert Warrenton and Gordon Avil. ■

LEE GARMES PROPOSES . . .

Regarding future Academy Awards nominations

Reverse the present procedure. Have the entire Academy membership vote to nominate the *Ten Best Pictures* of the year to be considered for awards in all classifications.

Each craft then votes subsequently to select the *best* achievement in its respective field from among these ten. No other pictures could be considered in the secondary voting — only those pictures named by the membership in its initial balloting.

Thus, cameramen would vote—and *only* cameramen—for the best photography awards, actors for best actor, art directors for best art direction, etc., etc. Academy members in other arts and crafts could not vote in categories other than their own.

Thus, Garmes argues, voting would be by those who work in and understand the work or art of the respective category for which they vote, and not by some 1500 to 2300 workers in various and sundry branches of the industry not directly related to, say, cinematography, script writing, direction, etc. ■

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DEPTH OF FIELD TABLE based on circle of confusion of .025mm (1/1000")

Diaphragm setting	Sharp from	To
1.8	18"	infinity
2.8	16"	"
4	14"	"
5.8	12"	"
8	10"	"
11	9"	
16	8½"	"

APPROXIMATE MECHANICAL SPECIFICATIONS

Overall length beyond lens mount; 4½"; with lens shade; 6"
Front diameter of lens; 3½"
Weight of lens without lens shade, 30 oz.; with shade; 36 oz.
Front dimension of lens shade; 4x6"

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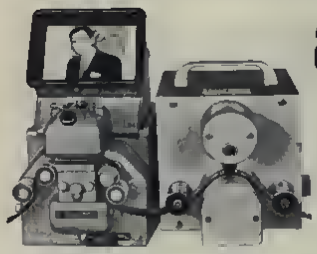

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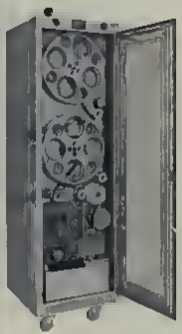

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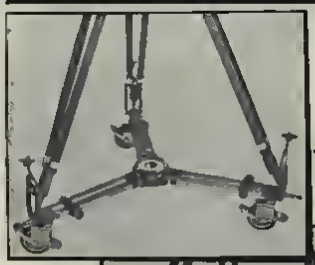

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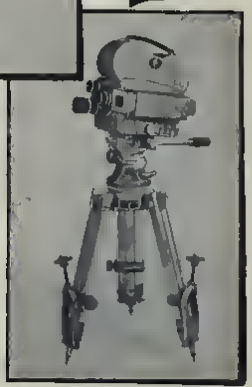

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The Space Age—New Challenge For Cinematography

By JAY MERMOUD

Photo Coordinator, Douglas Aircraft Co., Atlantic Missile Range

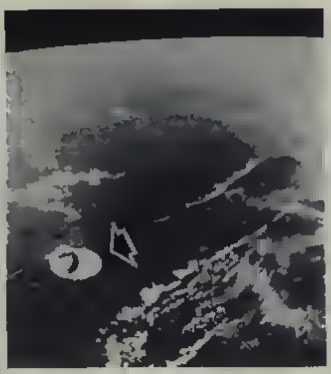


PHOTO ABOVE is frame enlargement from first motion pictures made from outer space, photographed by special 16mm camera mounted in missile nose cone Air Force Thor Missile (arrow) is shown falling away after separation Photo shows portion of continental U.S., also curvature of earth from altitude of several hundred miles.

In photo at left, technicians are removing from its styrofoam shockmounting in missile's recovered nose cone, the 16mm camera that made above high-altitude picture.

THE PHOTOS ON these pages graphically illustrate something of the magnitude of motion picture photography as utilized by the U S. Air Force in its development of space age ballistics. Most, if not all, of the photographs were made at the Air Force Missile Test Center, Patrick Air Force Base, Florida, and picture the variety of motion picture cameras and some of the personnel of RCA's extensive motion picture production staff engaged by the Air Force to photograph its motion picture requirements for this particular operation.

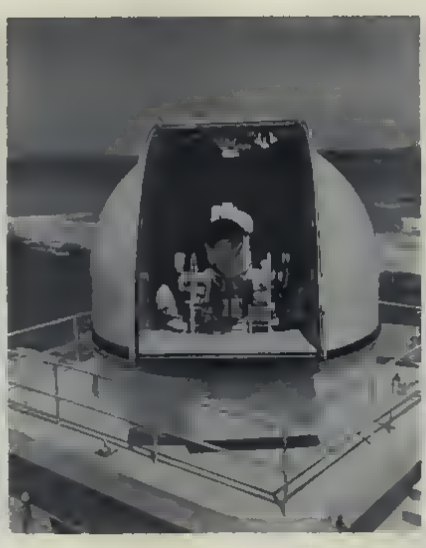
Few people realize that more 70mm 35mm, and 16mm motion picture film is exposed during a single missile launching (which takes only a few minutes) than all the 35mm film that is consumed in photographing an average Hollywood feature production during a four-month shooting schedule.

The space activities of the United States has created as an important ad-

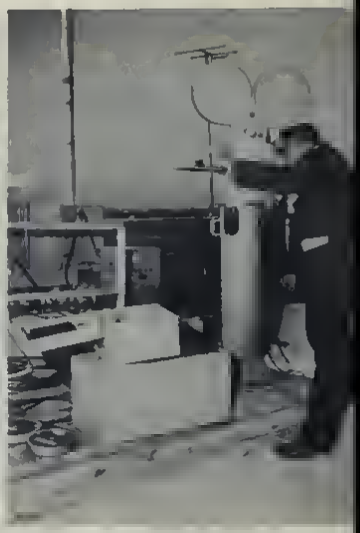
AUDIO-VISUAL report of recent flight tests of Air Force Thor-Able missile is made under guidance of author Joy Mermoud (right), with 16mm Auricon sound camera recording both picture and narration.

FOR DETAILED movies of external missile components functioning preceding a blast-off, two 16mm Milliken high-speed cameras were mounted on rugged framework within few feet of missile

TYPICAL RCA motion picture production unit films a progress report on Thor missile at the Air Force Missile Test Center in Florida



SAID TO BE THE LARGEST 22mm lens is this tracking telescope which has zoom range from 100 to 500 inches focal length. It's mounted on IGOR camera



35MM MITCHELL camera mounted on blockhouse of a missile pad is set to photograph a blastoff for a "performance report" film

junct one of the largest motion picture operations in the world. Today, motion pictures are providing our space science technologists with valuable data that only cameras can obtain. An outstanding example is the high-altitude photo reproduced on opposite page, which shows the earth as seen by a motion picture camera focused upon it from a height of several hundred miles. The photo is a blowup from a single frame of the negative exposed by the camera, which was mounted inside a General Electric nose cone boosted into space by an Air Force Thor missile.

The production of documentary motion pictures is another but no less important function related to the development of space age ballistics. At the Atlantic Missile Range, Cape Canaveral, Florida, all types of motion picture cameras are utilized for producing documentary and vital engineering data films. Documentary films are photographed with 16mm Auricons, 16mm Cine Specials, 16mm and 35mm

Continued on Page 318

Filming A Whale Hunt In The Antarctic

Constantly variable light, extreme cold, and the inability to shoot in rough seas with the camera tripod-mounted were just a few of the problems encountered by cinematographer-author Harrington in his quest for authentic scenes of Japan's modern-day whaling industry.

By CLIFFORD V. HARRINGTON

THE WORK ON "Kujira," our 16mm color documentary on Japan's modern whaling industry, provided my assistant, Nozaki Tsuneo, and me with a camera adventure which lasted 80 days and led us through some of the stormiest seas in the world.

During the 18,000-mile quest for giant Antarctic whales, we worked in a photographer's nightmare. In the south polar regions we experienced only four days which could have been considered suitable for movie making. Heavy overcasts and hail storms were frequent.

Always there was the bone chilling cold, which turned a routine change of lens stops into a complex task for our numbed fingers. Also there was the ever-present danger of a tumble into the frigid sea, which would mean certain death within minutes.

Despite our personal discomfort, we kept our cameras grinding to record these severe conditions under which twentieth-century whalers, working in Antarctic waters, labor and live.

Preparations for our documentary film project began late last November after we had gained permission to travel on ships of Japan's mammoth Taiyo Fishery Co.

My assistant and I were equipped with a new reflex model Bolex for the bulk of the coverage and a reconditioned model 3 Victor for the remainder. Our film stock consisted of Kodachrome for routine filming and Anscochrome for difficult scenes in extremely poor light.

We packed our film in air-tight tins which contained a quantity of silica gel, and stored it in our ship's refrigerator. We intended to take out film only as we needed it.

What caused us the most concern in our pre-production planning was the lack of information about the photographic conditions which we would encounter in the Antarctic Ocean. Although our copy of American Cinematographer Handbook gave us several valuable suggestions about polar camera work, the chapter did not include hints concerning photography on the sea.

AUTHOR CLIFFORD HARRINGTON (left) used a new Bolex 16mm Reflex camera, and his assistant Nozaki Tsuneo, a modified Model 3 Victor, in photographing whaling action aboard a Japanese fishery boat roaming the south polar regions in quest of giant Antarctic whales.

We interviewed several Taiyo company employees who had made previous trips, but they were of little help. They had never observed the somber Antarctic world as would a photographer. Finally we decided that if we could not "go by the book," we would have to write chapters for ourselves as we went along.

After leaving Japan in early December and traveling for a month through the South Pacific, we reached a spot south of the 60th parallel. Here we transferred to the 16,000-ton factory ship, Nisshin Maru, which was to be our headquarters during our stay in the Antarctic.

For the first two days we observed operations as the gathering ships brought in whales and the workmen processed them. Following this study we then planned our shooting.

As we photographed, we discovered that we could not use a tripod much of the time, because we had been warned to stay out of the way of the workmen. The tripod hindered their efforts. We partially overcame the problem of a shaky camera by selecting angles which did not include prominent static objects.

Rapidly varying light gave us trouble. Often during the brief time required to wind our cameras, there would occur a one lens stop difference in the light. Although this would cause editing problems, we could not stop. The same conditions could not be counted upon to return while the whales were being processed.

To make the resulting light changes less noticeable on the screen we frequently moved in for closeups in which the direction and intensity of the illumination would not have to correspond.

For our stay aboard one of the catcher ships to film the hunt for live whales, we packed only gear that was absolutely necessary. The 115-foot vessel was designed for maneuverability and not for comfort. As a result, space was at a premium.

It was fortunate for us that we traveled light, because we were not transferred directly to the catcher ship, which usually came alongside the larger vessel. We had to make a night voyage across the open sea in a small shuttle boat to meet it.

This short trip took on the aspects of a roller coaster ride with a leap for life thrown in at the end. As we

Continued on Page 316

WITHOUT BENEFIT of a tripod, Herrington (arrow) steadies himself on the slippery foredeck of whaling boat to film gunner going into action as whale is sighted

WHALE AHOY! A 65-foot finback surfaces momentarily to create excitement aboard the whaling ship

THE GUNNER'S aim was perfect, and as the harpooned whale is being towed toward bow of the catcher ship, Herrington (arrow) records the action on color film

Charlie Chaplin and Jackie Coogan in *The Kid*, 1921

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WALTER STRENGE (left) and author examine Ryder Sync Motor Drive mounted on 8-volt motor of a 16mm Arriflex camera, during demonstration of the sync-sound device at the A.S.C.

A Product Report On

RYDER SYNC MOTOR DRIVE

Sync-pulse generator synchronizes magnetic sound with picture without mechanical or electronic interlock of camera and recorder.

By JOSEPH V. MASCELLI

THE INCREASING interest in producing sound films with simple, low-cost camera-recorder book-ups is reflected in the growing number of sync-sound devices for this purpose which have made their appearance in recent months.

The pulse method of syncing sound and picture without need for mechanical or electronic interlock is becoming more popular as the result of recently-introduced equipment for this method of sound recording. The latest is the Ryder Sync Camera Drive introduced last month by Magnetic Sales Corp., Hollywood, Calif.

Essentially a sync pulse generator, the Ryder device is relatively small and lightweight, and it can be mounted on almost any spring- or electric-motor driven 16mm or 35mm camera. Designed for use in conjunction with the Perfectone quarter-inch magnetic tape recorder (described in our August, 1959, issue), the Ryder Sync Drive generates a synchronizing signal or pulse as the camera is operated, which is channeled to the Perfectone magnetic tape recorder via cable. The signal is recorded on two narrow tracks, one at each edge of the tape, with the picture sound recorded in the center. The sync signal is the key to all future synchronization between picture and sound.

When the tape is played back to transfer the sound to perforated magnetic or optical film, the full width of the tape is scanned. Since the two synchronizing signals are out of phase they cancel out in reproduction so that only the essential picture track is reproduced in the transfer process.

Spring driven cameras such as the Bolex H-16, Bell & Howell 70 and 240, Cine Kodak-Special, Eastman K-100, etc., equipped with a single frame (1440 R.P.M.) shaft—or which permit

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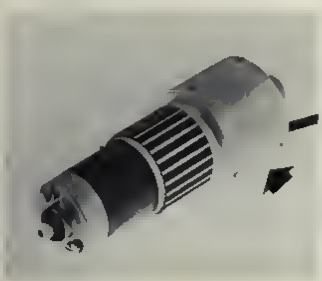

ARROWS POINT TO Ryder Sync Motor Drive mounted on 16mm Arriflex camera motor (left), 35mm Arriflex camera motor (center), and Bolex electric camera motor (right). Cameras or their motors must be sent to the maker of the sync unit for installation.

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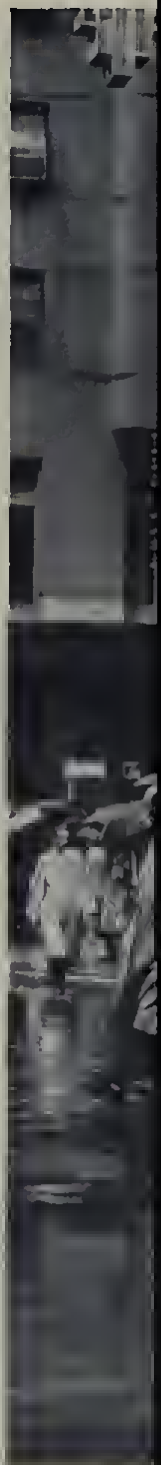

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OUTSIDE—Discussing upcoming sequence of exterior shots of BMEWS Radome in background with veteran cinematographer James Seeley, ASC, (center) is Writer-director Lowell A. Shaffer (right). Setting lens focus on the Arriflex 16 is camera operator Valdes Berzins.

INSIDE—To light vast Radome interior for photography, 10K's, 5K s, Skypans and Deuces were employed by RCA's motion picture unit to provide 94,000 watts of illumination. On camera platform at left are operator Berzins and James Seeley.

Progress Reports On Film

Film records of day-to-day progress of the Air Force's BMEWS program are produced by RCA Motion Picture Productions under the guidance of veteran cinematographer James Seeley, ASC.

BY E. J. TOWNELL and L. A. SHAFFER

THE IMPORTANCE of the motion picture camera in providing graphic progress reports on a wide range of their developments and operations has long been recognized by various branches of the government. One of the more notable instances is the construction program of the Air Force's far-flung warning system, which is being documented on motion picture film.

One of the important developments of the Air Force is BMEWS—Ballistic Missile Early Warning System. With the threat of enemy attack by ICBM's facing the free world, it has become essential that we have adequate warning to alert our retaliatory forces. The Air Force project involves the construction of giant radar sites at far north locations, and employs a large complex of American industry to carry out the development and construction program. In order to provide all concerned with an adequate understanding of the entire program, the Air Force has requested Radio Corporation of America, prime system contractor, to produce motion picture film reports on the progress and status of BMEWS.

A key member of the RCA motion picture unit is veteran cinematographer James Seeley, A.S.C. Seeley has recently transferred to RCA's defense motion picture unit from the Air Force Missile Test Center in Florida. In his present assignment, he is obtaining documen-

SEELEY, SHAFFER AND BERZINS express satisfaction with initial take of first operational tests of huge reflector of the BMEWS radar antenna, towering over them in the background. Photography was on 16mm film.

tary photography of a system designed to defend against the type of missile that he covered in test programs at Patrick Air Force Base. Seeley will be remembered by readers of the *American Cinematographer* as the ace newsreel cameraman who covered such events as the Hindenburg disaster, the recovery of the Akron dirigible, and the rescue operations of the Morro Castle fire.

In covering the BMEWS program, Seeley and his crew ran into problems seldom faced by others shooting industrial films. Although the program includes shooting in such locations as Thule, Greenland, where temperatures reach forty below with winds up to 120 knots, the filming of the construction of a tracking radar in Moorestown, New Jersey, presented the severest test of photographic skill. The task was to cover all stages of erection of the giant tracking radar radome and antenna. All photography had to be performed on a non-interference basis, since the entire program is being carried out with a tight deadline.

Covering the erection of the radome posed no lighting problems, since the entire operation was carried out in daylight. However, the photographic coverage is used to produce training films as well as progress films, and all details of construction had to be fully covered. The radome, when completed, will be high as a fifteen-story building, and spherical in shape. There were no crossbeams on which to mount a camera, and the construction of a catwalk or scaffold that high was economically unfeasible.

Once the first level of radome was emplaced, shooting from the roof of the radar building was impossible because of the outward curve of the structure. At this point, the camera crew employed a light aircraft to make daily flights over the area to permit an overall photographic coverage of construction progress. The detail shots were made possible by building a special platform for the camera, operator and director, and raising this platform to work level by means of a giant crane.

At times during final construction, the camera crew worked suspended 200 feet in the air, and out of view from the crane operator. Directions for shifting the camera platform were given by walkie-talkie to the crane operator; however, the effect of platform movement could not be avoided. The frame speed could not be increased to minimize the effect of this movement since the camera was recording the construction crew in action as it emplaced the last piece on top of the radome.

Once the antenna was completed, the tracking radar antenna and pedestal were constructed inside. This procedure is required at the northern sites so that high winds and snows will not damage the radar components. The problems here were with both lighting and camera angle. The radome does not transmit light, and the reflector with its 84-foot diameter all but filled the radome when it was completed.

For lighting, power was obtained from the source which will power the radar when in operation. 5-K spotlights were placed atop a 45-foot scaffold. Other 5-Ks and Sky-pans were placed around the base of the pedestal. In order to stay clear of the crew, which at times was swinging 46,000 pounds of steel through the air, the lights had to be kept back near the outer ring of the radome. As the reflector was added to the pedestal, the scaffold had to be removed and it was necessary to bring in additional 10-K spots in order to light the upper portions of the operation.

All filming was done with Eastman Ektachrome Commercial on the basis of 25 ASA rating. Toward the latter stages of construction, the new high-speed Ektachrome came out for test, and the results with this film indicate that it could have been used to advantage throughout this program. The wide-angle shots were obtained by using the new Kinoptic 5.7mm lens with an Arriflex 16 camera. Although this lens tended to distort the giant reflector, its sharpness, even when used wide open, was such that excellent pictorial coverage was obtained.

Cut-away shots and closeups were obtained with a B&H Filmo equipped with a 10mm and 1-inch lens, and by using a cameraman who had the ability to climb, duck and swing by his tripod. The sequence resulting from some four months' shooting on this tracking radar was but a small part of the overall BMEWS film for the Air Force; but it does point out the importance given to the motion picture in an age where factual and understandable communications are an essential part of our defense effort. It is interesting to note, also, that more and more, the valuable experience and know how of veteran cinematographers like James Seeley are being recognized and channeled into the production of vital industrial and public information motion pictures. ■

A PARALLEL suspended high from boom of 200-foot crane serves as camera platform for making progress shots of the BMEWS Radome, as its construction reaches the halfway point.

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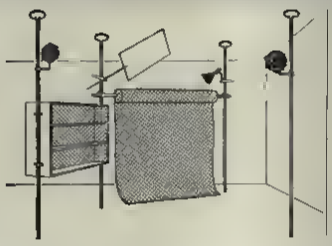

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OSCAR WINNERS!—Beaming with their newly won Oscar statuettes are cinematographers William Mellor, ASC, left, and Robert Surtees, ASC. General Edward P. Curtis, Eastman Kodak President, center, presented the photography awards for the Academy at its 32nd Annual Oscar presentations in Hollywood last month

Academy Honors Mellor and Surtees for

Best Cinematography For 1959

Photography of "Diary of Anne Frank" voted best in black-and-white, "Ben-Hur," best in color.

TWO OF HOLLYWOOD'S top-flight cinematographers, both previous Academy Award winners, added to their collection of Oscars last month when they were awarded gold statuettes for the best cinematography of 1959 by the Academy of Motion Picture Arts and Sciences at its 32nd Annual Awards presentation ceremonies in Hollywood.

William Mellor, A.S.C., who won his first Oscar in 1952 for the photography of "A Place In The Sun," received a companion statuette when the Academy voted his photography of "The Diary of Anne Frank" "best achievement in black-and-white cinematography for 1959."

Robert Surtees, A.S.C., with two previous Oscar presentations to his credit for "King Solomon's Mines" (1950) and "The Bad And The Beautiful" (1952), was awarded his third Oscar for the photography of MGM's "Ben-Hur," voted "best achievement in color photography for 1959."

Presentation of the awards for cinematographic achievement was made in behalf of the Academy by General Edward P. Curtis, President of Eastman Kodak Company. General Curtis prefaced the presentations with a few well-chosen words that, for millions of radio and television fans at least, explained succinctly the importance to motion pictures of good photography and particularly the contribution of the imaginative cinematographer.

Without photography, of course, there would be no motion pictures; and without imaginative cinematographers it's unlikely there would be great motion pictures of the calibre of "Diary of Anne Frank" and "Ben-Hur." In both instances, imaginative photography played a big part in the box office and artistic success of the pictures.

To properly evaluate the photography of a motion picture, one must consider both its creative and artistic aspects and the mechanics that were employed in filming it. Sometimes the latter is responsible for more of a picture's luster than meets the eye. In the case of "Diary of Anne Frank," the locale of most of the action was virtually a single set, which greatly limited both the lighting and camera movement. Yet, William Mellor achieved some outstanding things, both in set illumination and lighting effects, and in giving mobility to his camera. In Herb Lightman's article in our June, 1959, issue ("Filming 'The Story of Anne Frank'"), the author explores this very facet of the production.

"Fluid use of the camera," Lightman said, "did much to add movement to what might otherwise have been a visually static film. It also helped to establish geographically the special relationship between various rooms and areas of the complicated set."

About the lighting, Lightman went on to explain: "Lighting the narrow stairway (leading to the Frank's hideaway) at the beginning of this shot presented a serious illumination problem, since the camera angle included both of the walls as well as floor and ceiling. There was only one small opening in the top of the set through which Mellor could direct a 2,000-watt spot. However, he did not regard this as a detriment, but rather an opportunity to achieve a realistic effect lighting."

"In situations like this," Mellor told Herb Lightman, "where it is difficult to get the right amount of light, I always try to maintain some illumination in the background. In this way I can silhouette the figures, letting them walk in and out of the light, which is often more effective than keeping the entire action fully lighted."

Robert Surtees directed the photography of MGM's multi-million dollar "Ben-Hur" entirely in Italy, using Panavision cameras and 65mm Eastman Color negative. Libero Grandi, in his article, "The Photography of 'Ben-Hur'", which appeared in our October, 1959, issue, described some of the photographic problems encountered by Surtees.

"An ever-present problem," said Grandi, "was maintaining a vigilant check on the color temperature of the

Continued on Page 310

LOOKING DOWN on activities on the Fox sound stage during the filming of the "Garden of Eden" ballet sequence for "Can-Can". Two large booms may be seen at left—the lower one carrying the Todd-AO camera, and the one above, the huge spotlight playing on the dancers on the stage below

A WIDE SCREEN CLOSEUP of Shirley MacLaine, center, holding the center of the stage during the ballet sequence while other dancers mark time awaiting their cue. For this costly sequence in "Can-Can" special lighting and camera mobility was worked out that made it the hit of the picture

Filming 'Can-Can' In Todd—AO And Color

Excellent use has been made of the wider 65mm negative, and some unique procedures in lighting and camera handling were introduced to give 'Can-Can' unusual pictorial luster.

By HERB A. LIGHTMAN

"CAN-CAN", produced in the Todd-AO system by 20th Century-Fox Studios, is a bright and bouncy film adaptation of Cole Porter's long-run Broadway stage musical. Rollicking entertainment from fade-in to fade-out, it scores solidly as the result of energetic performances by an engaging cast, expert direction by Walter Lang, and spectacular choreography by Hermes Pan. Photographically it is a visual delight—a bright-colored feather in the cap of Director of Photography William H. Daniels, A.S.C.

At first glance, "Can-Can" would appear to offer little challenge to a cameraman. The sketchy plot involves an amiable love rivalry, but no actual conflict. The two gentlemenly French attorneys vying for the hand (and parts thereunto adjacent) of a spirited music hall proprietress are both nice guys—so there isn't even a villian of the piece. It is all very frothy, fluffy, gay and even "cute"—so there was no opportunity for the mood lighting or unusual camera angles that cinematographers so dearly love to sink their professional teeth into.

And yet, this very consistency of high-key mood in itself presented a photographic challenge. To send a screen musical humbling along for more than two hours, keeping it always visually fresh and interesting while avoiding the deadly "sameness" in lighting and camera approach that might have crept in, is a considerable achievement. Moreover, because of the startling colors used on the sets plus the demands of the intricate production numbers, a great many unusual problems of lighting and camera movement were encountered. It is a tribute to the experience and skill of Daniels that his photography is so smooth as to be seemingly effortless despite the problems, some of which he deliberately brought down upon himself in order to help create a more colorful and visually exciting film.

The period of the picture is 1896 and the locale, Paris—the Paris of Toulouse-Lautrec and other "radical" French Impressionist painters of the time. Bold colors typical of the works of these *avant-garde* artists were selected for the sets and costumes of "Can-Can"—even though it would have been much simpler photographically to stick to more conventional hues. The walls of the music hall, for example, were brick-red, a color which absorbs a

Instead of dimmer boards, lights were divided into several circuits fed by separate generators, which were controlled individually to produce dissolves between lights of different colors—an effect that keyed much of the dance action of the ballet number and made it pictorially unique.

FILMING A TENSE moment in the ballet in closeup. The Todd-AO camera, mounted on a crane, weaves in and out during the dance routine and comes to rest at a low height for the closeup. As the dancers rehearsed the ballet prior to going before the camera, the camera and lighting crews also rehearsed.

great deal of light and which is likely to take on a peculiar cast if not properly lighted and exposed.

The upstairs living room of Shirley MacLaine (*femme fatale* of the music hall) was pale green, a pleasant enough shade but one which can reflect a ghostly glow onto the faces of the actors unless the lights are placed exactly right. Her bedroom walls were adorned with what Daniels describes as "the craziest wallpaper you ever saw, with figures that jump out at you." It had little splashes of pink and was authentic to the period, but it was also a photographic nightmare. The courtroom presided over by sedate French judges had walls of a bright lemon yellow.

Much of the action takes place inside the law offices of Louis Jordan—a most unusual legal establishment, since its walls were done in a bright pool-table green. This particular shade of green soaks up light like a blotter—and it is a color that art directors and cameramen ordinarily shun like leprosy. Lighting the set required more illumination than would have been used on a normally-colored set five times as large. "I used special 10 kilowatt lamps to light the walls," Daniels explains, "and the light just disappeared. You couldn't even tell they were there. Ordinarily I would have used 2 kilowatt lamps overhead; this time we had to put in 5 kilowatt lamps.

"It was impossible to use ordinary incident light readings to balance exposure between the walls and the actors —we just had to judge by eye. The main problem was to equalize the contrast between the walls and the dark mahogany wood paneling. If we had exposed for the walls the wood would have gone almost black. The problem

Continued on Page 312

WHILE THE CAN CAN girls go through a final rehearsal, cinematographer William Daniels takes a last-minute meter reading of the light at the critical spot, marked by strip of tape on floor, indicating where Shirley MacLaine will stop in her advance toward camera, when the dance is filmed.

PANAVISION'S PROGRESS

The company which gave the industry Panavision 65mm cameras and Panatar lenses announces a unique method of producing films for Cinerama-type exhibition, new streamlined 65mm cameras, and a portable hand-held 65mm camera.

By DARRIN SCOT

PANAVISION'S new 65mm camera is streamlined, self-blimped, and just slightly larger than a Mitchell BNC. Two of its salient feature are a new type movement and a 200° variable shutter.

PANAVISION, INC., scored doubly in the Academy Awards this year, first—and somewhat indirectly—when Robert Surtees, A.S.C., won the Academy's award for best achievement in Color Cinematography for his camera work on "Ben-Hur," and later when Panavision's President, Robert E. Gottschalk and Douglas Shearer, Chief of Research and Development at MGM studios, received the Academy's Class II trophy for Scientific and Technical Achievement for the development of MGM's Camera 65 system of producing and exhibiting wide-screen motion pictures.

Surtees used the Panavision-engineered 65mm cameras in filming "Ben-Hur." The part Panavision played in the development of the Camera 65 system was described in the March, 1960, issue of *American Cinematographer* ("Why MGM Chose Camera 65," by Herb A. Lightman).

In recent months Panavision engineers have busied themselves bringing to fruition some other "surprise packages" for the industry. These include a process of producing Cinerama-type 3-panel movies with a single 65mm camera, a streamlined, self-blimped Panavision 65mm camera not much larger than the Mitchell BNC; and a slick hand-held 65mm camera—all of which will be described in ensuing paragraphs.

One of Panavision's most interesting developments is the adaptation of the Ultra-Panavision 65mm anamor-

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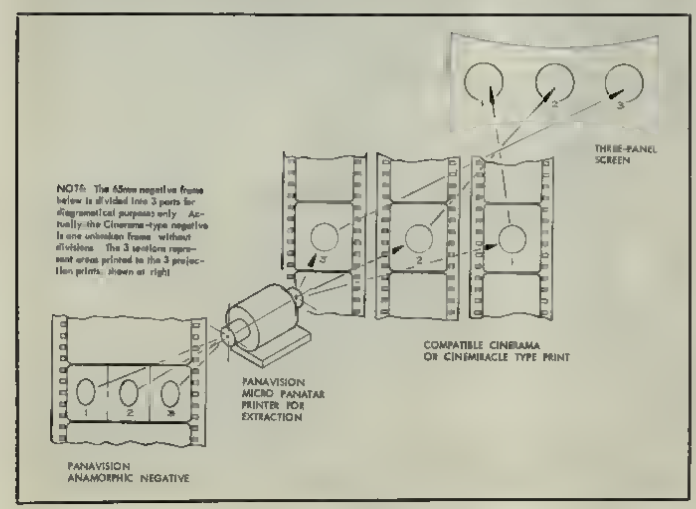
NOTE: The 65mm negative frame below is divided into 3 parts for diagrammatical purposes only. Actually, the Cinerama-type negative is one unbroken frame without divisions. The 3 sections represent areas printed to the 3 projection prints, shown at right
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DIAGRAM shows how Cinerama-type motion pictures are extracted from a standard 65mm Panavision camera negative to produce the three prints required for Cinerama or Cinemiracle type presentations.

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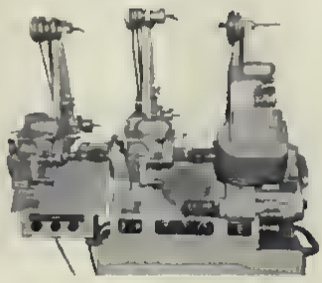

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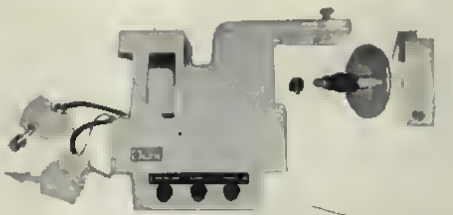

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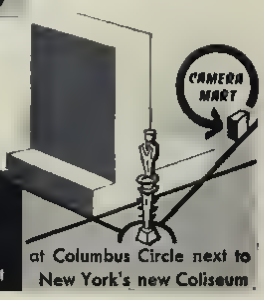

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phic process to produce, from a single 65mm negative, three 35mm non-anamorphic prints for projection with existing Cinerama or Cinemiracle three-projector set-ups. (See diagram.)

To extract 35mm strips for Cinerama from an original 65mm negative shot in the Ultra-Panavision process, the negative is set up in a custom-designed printer and a special de-anamorphosing printer lens is mounted to scan first the left side of the 65mm frame, then the center, and finally the right side—each time recording that segment of information on a separate 35mm print, resulting in three perfectly matched panels to be projected side by side on Cinerama or Cinemiracle screens. The screen result is similar to that produced by these two processes, but free of the typical distortions and limitations inherent in a three-camera system.

Extraction of the three prints from the Panavision 65mm negative can be done only by Technicolor laboratories. Because of the unique aspects of imbibition printing, Technicolor can print optically without producing a second generation dupe print. Technicolor's very much greater flexibility and control of color, combined with the company's excellent wet printing technique gives the Ultra-Panavision extraction process the advantages of these additional controls and quality.

The Cinerama and Cinemiracle processes both utilize three cameras, mounted side by side in an arc which covers a very wide aggregate angle of view. In both processes the center camera shoots forward and the two cameras on either side criss-cross, the right camera producing the left panel and the left camera producing the right panel.

Because 27½mm extreme wide angle lenses are the standard for these cameras, there results an inherent distortion in certain types of scenes which is distracting to the viewer and forces rigid limitations upon the cameraman. For example, closeups of people shot with Cinerama cameras show typical wide-angle closeup distortion. Noses appear very long and foreheads slant back. Ears are very small in proportion and chins recede. The result is that actors look very odd in closeups, so odd, in fact, that close ups must generally be avoided when filming in a three-camera process. The Ultra-Panavision method, by contrast, permits use of lenses in a wide range of focal lengths. Thus, closeups are natural and undistorted.

Were a cinematographer to photograph an infinity scene, first with one of the three-camera processes and then for the Ultra-Panavision extract

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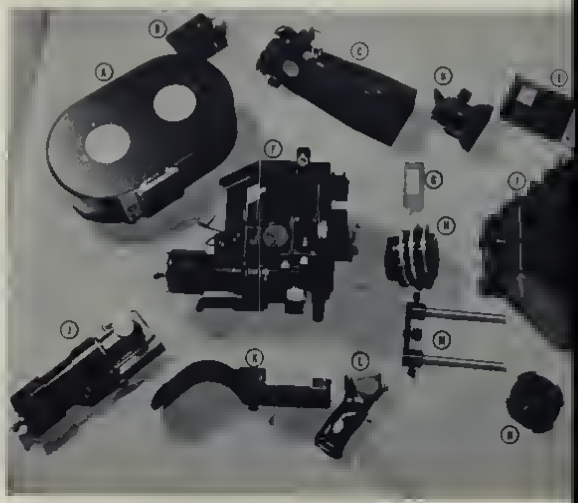

COMPONENTS of the Panavision hand-held camera: A—500' magazine. B—Magazine cover plate. C—Mitchell feeder. D—Sport finder. E—Tripod mounting plate. F—Camera box with motor. G—Feeder motor. H—Lens. I—Sunshade & filter holder. J—Spare 32-V wild motor. K—Shoulder rest. L—Pistol grip with trigger switch. M—Sunshade mounting rods. N—Lens cap.

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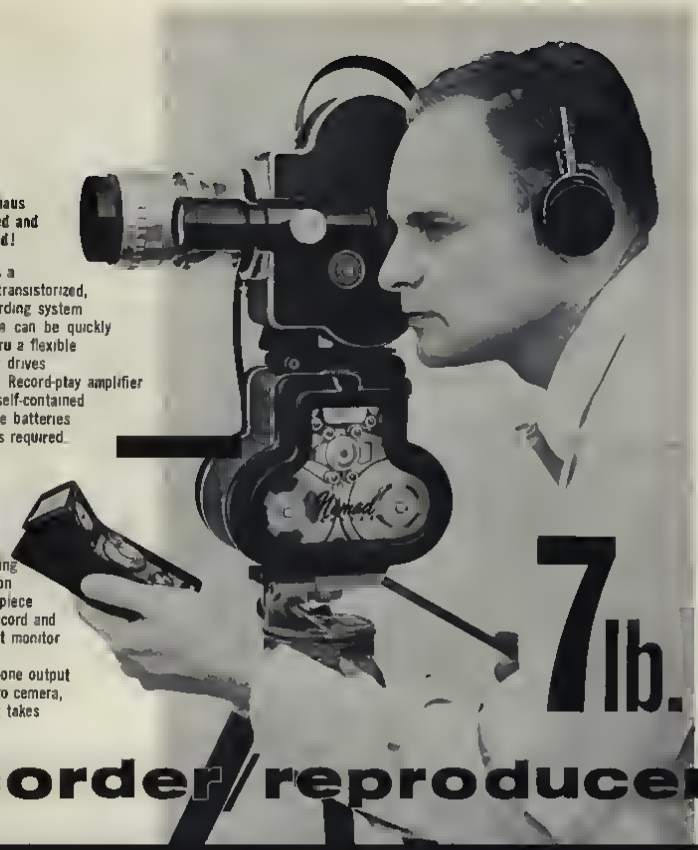

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Some Aspects Of Cinematography For Color TV Films

Compotible color television, broadcost simultoneously for both color ond B&W receivers, poses technicol requirements for films mode especiolly for the medium.

By SIDNEY P. SOLOW

Vice-President and General Manager, Consolidated Film Industries

SIDNEY P SOLOW

THE ADVANCED TECHNOLOGY in the field of color television is opening new vistas for marketing of color motion pictures. Even today, with the ratio of black-and-white to color receivers predominantly favoring monochrome, a number of programs are being filmed in color in expectation of video's transition to predominantly color programming.

It is expected that much of the television programming in color will consist of motion picture film. In the face of this approaching demand, the Hollywood cinematographer holds the responsibility for the adaptation of color motion picture techniques to television color broadcasting. With a long history of experience behind them, the major studio cinematographers should find the transition relatively simple.

Some television engineers are of the opinion that a good color film results in a better color telecast than a live performance. This stems from the fact that the use of film provides a continuous and complete control of quality—especially at scene changes. On the other hand, the live television broadcast is normally handled through the use of three or more cameras—each with its own individual characteristics. It sometimes is difficult to balance all video cameras in respect to each other, resulting in a change in picture quality when switching from one camera to another.

However, just as the advent of television brought about changes in filming and processing techniques, compatible color television—broadcast simultaneously for both color and monochrome receivers—poses still greater technical and artistic challenges.

LESTER SHORR, ASC, (in white coat, leaning against tripod) and his camera crew on location shooting scenes for NBC-TV's "Bonanza," one of the many TV film series being photographed today entirely in color

The cinematographer experienced in filming in color for theatrical projection finds his major problems in shooting for television evolve from the medium's present lopsided market. Networks presently require color shows to satisfy the demand of this nation's 500,000 color TV receivers. At the same time, however, they also broadcast these same programs to more than 40 million homes having monochrome receivers. The combination of photographic requirements for video films intended to serve the present dual market requires special care on the part of the cinematographer.

He must keep in mind that the majority of viewers will see the presentation in black-and-white, but he also must interject all the qualities desirable in color films.

As a hypothetical problem which could be encountered:

The camera is focused on a red object against a blue background. Both colors have the same monochromatic value or brightness. The result would be that while the color receiver would present a vivid contrast between the two colors, the monochrome receiver would show both the object and background in the same shade of grey. Subject clarity would suffer badly.

This problem is, of course, not new to cinematographers. They have known for years that color scenes must be evaluated in terms of panchromatic black-and-white values. The requirements of color filming for the television medium simply emphasizes the importance of the dual approach.

Some important points in color filming for television might well be considered as general "rules-of-thumb":

Lighting — An extensive series of tests conducted by Eastman Kodak Company revealed that color photography for television transmission requires low lighting ratios (key

Continued on Page 308

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CINEMATOGRAPHY FOR TV

Continued From Page 306

fill)—ideally 2:1 or at most 3 1

This again is nothing new to the cinematographer. All color photography—whether for theatrical projection or color television transmission — demands the same treatment. A properly balanced color motion picture film generally will fare equally well in the theatre and on the color TV receiver.

Actually, there is less difference between lighting for color theatrical production and color television transmission than is the case in black-and-white photograpby Common practice in making monochromatic motion pictures for theatrical projection places the lighting ratio at 4:1 or higher. Television broadcasting, however, dictates that a lighting ratio from 2:1 to 3:1 be used for optimum results Exceeding this ratio produces a lack of detail in shadow areas and/or by highlight areas and a general degradation of picture quality on the television receiver.

Set Decoration—This is the area in which consideration of monochromatic rendition of colors becomes highly important

In general: No colors should be employed in sets which approach skin tones All colors which might reflect or contaminate picture content in an adverse manner should be avoided, and no strong hues should be used in sets Saturation should be kept low on all subjective colors and flat paints employed to cut reflection.

Costume choice should feature low color saturation and high reflectance

Make-up — In most cases, choice of make-up for color television coincides with that which is normal for color motion pictures. Lipstick should be on the light side—possibly 1A, an orange tone. Eye-shadow should be neutral.

Artificially-aged hair must be handled carefully. The acids of the hair react differently with each make-up. Quite often this phenomenon causes the hair to appear green. In addition, lacquer sprays should be avoided as they cause black hair to appear blue and brown hair to appear green

Film Processing—Prime responsibility for film and print contrast in the use of color lies with the cinematographer.

Unlike with black and-white films, there is little that can be done in the laboratory to vary contrast on color film.

When monochrome film, processed for theatre projection proved to be too contrasty for optimum picture quality on television, laboratories developed techniques to produce flatter prints by varying gamma. To date, however, no laboratory technique has proved successful in varying the contrast of color films. The techniques that have been tried have developed adverse side effects. For example, the laboratory *can* lower contrast by pre-flashing color prints, but this procedure tends to cause color desaturation.

The following method of evaluating a color film for TV is recommended where a closed circuit television system is not available to view the print as it might appear on home television receivers:

Using normal film projection equipment, reduce the over-all screen size to no more than 21 inches on the diagonal

The screen illumination should have a color temperature of approximately 5600° to 5800° Kelvin, and a brightness of 12 foot-lamberts Introduce the flare factor inherent in the color television receiver by shedding 1½ foot-lamberts of ambient light on the screen

Take a seat approximately 8 to 10 feet from the screen—the average television viewing distance. Do not view the print in total darkness, but introduce a nominal amount of ambient light in the room Two small desk lamps set up near the seating area should provide the required illumination

The conversion from color for theatrical projection to color for television transmission poses no insurmountable problem for the Hollywood studio cinematographer. He already possesses the technical background necessary to achieve success in this special field of motion picture photography The suggestions set down above are intended simply as reminders and guides to some of the more important requirements of color television. It is hoped that they will be helpful to the cinematographer in creating a quality product for the coming color television market. ■

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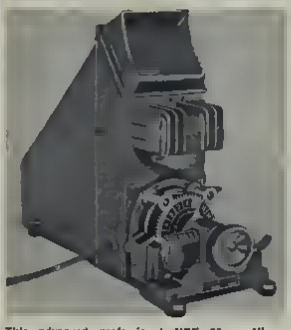

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"OSCAR" WINNERS

Continued From Page 288

light. And because shooting in Rome extended from May until December, it was necessary to aim for consistency in the color temperature, so scenes shot in May would look no different than those shot in December, when days were shorter and the sun closer to the horizon.

"Surtees found the color temperature of the Italian sunlight quite variable. In Rome, especially, the luminosity is intensive, yet is often characterized by sharp changes that take place within only a few hours. It was Surtees' constant aim to produce negatives so precisely color-balanced that the film laboratory's task in correcting for color would be reduced to a minimum and result in prints approximating his expectations."

In addition to his Oscar winners, two other pictures which Surtees photographed were previously nominated for Academy Awards for photography—"Quo Vadis?", 1952, and "Oklahoma," 1956.

Mellor's photography of "Peyton Place" was nominated for the 1958 awards, but lost out to "Bridge On The River Kwai" in the final voting—the latter picture photographed by British cinematographer Jack Hildyard.

"Ben-Hur" made almost a clean sweep of the Oscar awards this year, winning 12 in all: Best Picture, Best Color Cinematography, Best Actor (Charlton Heston), Best Direction (William Wyler), Best Costume Design of a color production, Best Special Effects, Best Supporting Actor, Best Sound Achievement, Best Film Editing, Best Art Direction (Color), Best Set Direction (Color), and Best Music Score.

Scientific and technical achievements came in for greater recognition this year, with a total of seven being singled out by the Academy's Board of Governors, following recommendations by its Scientific and Technical Awards Committee. Instead of the Academy's traditional Oscar, Plaques and Certificates of Merit are given by the Academy for Class II and III scientific and technical achievements.

Plaques signifying Class II awards were presented to:

Douglas G. Sheurer of Metro-Goldwyn-Mayer Studios, and *Robert E. Gottschalk* of Panavision, Inc., for developing a system of producing and exhibiting wide-film motion pictures known as Camera 65.

(This 65mm photographic system employs newly-designed camera and printing lenses in a two-step anamorphic process which minimizes distortion and improves print sharpness. The system also provides a negative from which prints can be made for any standard or wide-screen projection system, retaining the original vertical composition.)

Wadsworth E. Pohl, William Evans, Werner Hopf, S. E. Howse, Thomas P. Dixon, Stanford Research Institute, and Technicolor Corporation for the design and development of the Technicolor Electronic Printing Timer.

(This device simulates the photographic printing process electronically, and by its adjustment provides timing data for printing to the desired color balance. With this direct viewing method, color negatives can be timed rapidly and accurately, resulting in improved daily prints and operating economies.)

Wadsworth E. Pohl, Jack Alford, Henry Imus, Joseph Schmit, Paul Fassnacht, Al Lofquist and Technicolor Corporation for the development and practical application of equipment for wet printing.

(The wet printing principle is employed in this printer which transports the negative through a liquid of proper refractive index and into a position where printing is accomplished while the negative is coated by the liquid. By printing in this manner, cinch marks, scratches and abrasions are attenuated so that they do not appear in the prints.)

Dr. Howard S. Coleman, Dr. A. Francis Turner, Harold S. Schroeder, James R. Benford and Harold E. Rosenberger of the Bausch & Lomb Optical Co., for the design and development of the Balcold Projection Mirror.

(This projector arc lamp reflector directs only the useful light upon the film, rejecting the destructive heat rays. The resultant decrease of heat at the film aperture reduces film damage and allows better in-focus projection.)

Robert P. Gutterman of General Kinetics Incorporated and the *Lipsner-Smith Corporation* for the design and development of the CF-2 Ultrasonic Film Cleaner.

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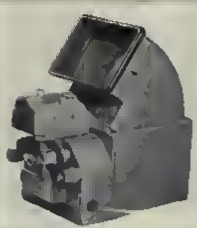

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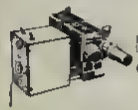

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Certificates signifying honorable mention for Class III awards were presented to:

Ub Iwerks of Walt Disney Productions for the design of an improved optical printer for special effects and matte shots.

(This optical printer combines the images from three projection units simultaneously, each adjustable for position, magnification, film direction, and timing with a viewing device for the operator to check his composite results during line-up and operation. As many as six films may be superimposed at one time in this printer.)

E. L. Stones, Glen Robinson, Winfield Hubbard and Luther Newman of the Metro-Goldwyn-Mayer Construction Department for the design of a multiple cable remote controlled winch.

(This winch drives endless cables to which miniatures are attached. By the location of sheaves and selection of pulley diameters, direction and speed of miniatures are controlled and duplicated.)

Presentation of the Technical Awards was not a part of the Presentation Ceremonies at the RKO-Pantages theatre this year (the show that was televised) but took place later at the Academy's post-awards banquet and ball at the Beverly Hilton Hotel. ■

FILMING "CAN-CAN"

Continued From Page 301

was solved by coating the woodwork with a pale grey wash that changed the surface to a shade much lighter than normal, while still retaining the visible grain of the wood. I knew in advance that these colors would be a real problem to light but I okayed them because the color plan appealed to me."

There is only one "exterior" set in the film— a Paris night street scene outside the music hall, 400 feet long and built at a reported cost of $85,000. Populated with horse-drawn carriages, cocottes and dandies of the period, the scene first appears on the screen in the form of a painting just as the opening titles fade. By means of a precisely matched dissolve the painting comes to life and the scene serves to establish the locale, the mood and the period of the picture. To produce this effect the scene was photographed first and the painting was matched to a blown-up frame of the film, making a matched dissolve possible.

"Can-Can" features some magnificently choreographed dance routines, all of which take place in areas of the music hall set, and Daniels adapted his photography to make each one of them look different. The Apache number, in which Shirley MacLaine is thrown around in turn by five lusty lads, is probably the most violent display of mayhem ever to come under the heading of terpsichore. The much-vaunted Can-Can routine, which reportedly shocked Soviet Premier Khrushchev's proletariat propriety when he visited the set during shooting, is tame by comparison and about as naughty as a Ladies Aid pot-luck picnic. The choreographic high point of the picture, however, is the spectacular "Garden of Eden" ballet. For originality of concept, precision of execution and sheer physical beauty it has rarely, if ever, been equaled on the screen.

The "Garden of Eden" number was the most difficult, most expensive and most time-consuming sequence to film in the picture. It was rehearsed for six weeks and took five days to shoot. It tells the story of the Fall of Man in an extraordinarily imaginative way. Photographically it presented some formidable problems. The ballet takes place on an auxiliary stage of the music hall, on an elevated platform. As the curtains part it is night in the Garden of Eden. Adam and Eve and all of their animal playmates are fast asleep. The entire scene is suffused with blue light. Then, as dawn breaks, the blue gradually changes to pink and the inhabitants of the garden awaken. During the course of the action, when Eve bites into the apple, the overall pink light changes to gold and the tempo of the routine builds to a fast-paced climax.

Appearing smooth and deceptively simple on the screen, these light changes from blue to pink and pink to gold required extremely complicated electrical rigging and a unique type of dimming set-up. The backing of the set was approximately 250 feet wide, and all of it had to be lighted in addition to the foreground areas. Moreover, a *double* set of lights on two separate circuits had to be rigged side by side —one set with blue filters, the other with pink. In all, 47,000 amperes of light had to be installed on the one set.

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sons. First, the picture was shot just before Eastman-Kodak introduced its new high speed color negative. Daniels had to use the old slower type Eastman color, which the manufacturer rates at ASA 25, but which he exposes at ASA 16 because he prefers a lighter negative. Also, the Todd-AO process, with its 65mm negative uses lenses of approximately twice the focal length of those used on 35mm cameras. Thus, in order to get any depth of field at all it was necessary to stop down to at least f/4.0. Third, there was the necessity of a double installation of lighting units to permit the change from one color to another. And, fourth, the colored gelatin filters used in front of the lamps greatly reduced the intensity of the exposurable light.

Under simpler conditions the light changes could have been easily handled by means of dimmers, but the largest single dimmers used in the film industry can handle only 100 amperes. Thus a more comprehensive set-up was required. It was decided to use the main source of power supplied by huge generator plants within the studio itself, and to control the generators like dimmers. Four separate generators with remote controls were hooked up so that each lighting circuit was supplied by two generators. When filming the scene, the two controlling the circuit of blue lights were started first. As the action progressed and the first light transition was called for, these two generators were gradually slowed until the lights were extinguished. While at the same time the other two generators (controlling the pink lights) were stepped up from slow to full speed. Two men on the set handled the four remote controls that dimmed the generators, located some distance away. Cued to precise moments in the action, they had to synchronize their movements exactly in order to effect a smooth transition. The same technique was used later in the sequence for the transition from pink to gold light. In the center of the set was a stylized tree with blinking lights in which the serpent reposed. As she slithered down the tree trunk she was bathed in a weird green light to accentuate her startling green-sequined costume.

Cinematographer Daniels was meticulous in selecting the hues of the filters. He had to choose colors which were correct for the changing moods, while keeping in mind the rate at which gelatin filters of various colors fade when exposed to extremes of heat and light for prolonged periods. This was a major problem. Some gelatin filters faded so fast that often by the time a set-up was made and the company ready for a take, everything had to stop while the fading filters were changed. The gold filters held up quite well, and a blue was found that would not fade too quickly; but the pink would fade out to white within an hour.

Incandescent lighting units were used exclusively to film the ballet, with the exception of a few arcs placed as high back-lights to add sparkle, plus two theatre-type arc spots used to follow the principal dancers.

Photography of the "Garden of Eden" ballet called for much violent camera movement. The camera, mounted on Hollywood's largest camera boom, was continually moving in and out, necessitating the co-ordination of many elements and much heavy equipment—and yet, so smoothly were these camera movements executed, they are not too obvious to the viewer.

The follow spotlights were also mounted on large booms, which were moved in and out precisely on cue. Daniels has loud praise for the lighting equipment at 20th Century-Fox. He especially appreciates the lighting units which have controls permitting the light intensity to be equalized over a distance of perhaps 50 feet, as an actor approaches or withdraws from the camera. In many studios using conventional lighting equipment, the units have to be rolled in and out with the performer to maintain the same light intensity on him as he moves. With the Fox studio equipment, when an actor moves from a foreground to a back-

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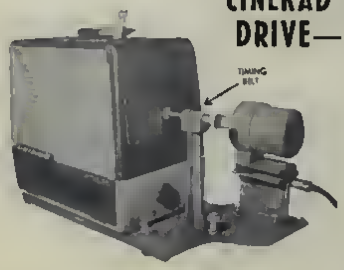

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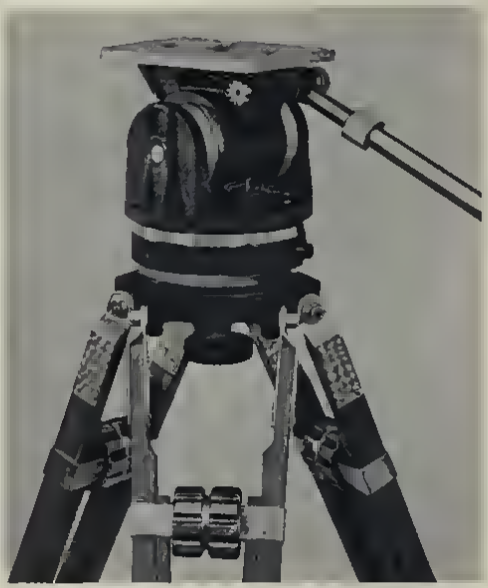

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ground position, the intensity of the light illuminating him can be controlled within the lamp itself, without the necessity of moving it

Although the "Garden of Eden" ballet was a most difficult number to photograph, so carefully was the camera and boom operations planned that not once was the company held up because of camera problems. "It was a very strenuous routine for the dancers," Daniels observes. "It was extremely athletic, with much running and jumping throughout. We had to make sure that everything worked properly because we didn't want those kids to have to do a dance number any oftener than necessary, or to have to make additional takes because of camera problems. If the dancing was right we wanted to be right, too. As it turned out, we were able to shoot as fast as the dancers could stand it."

Audiences seeing "Can-Can" are impressed by how well the actors look. This is not due to make-up, but rather to a lack of make-up. Daniels has never believed in using make-up on men in films, except where a heavy characterization is called for. "Men invariably look artificial wearing make-up," he explains. "They look much more natural without it and more attractive, too, because they appear more virile. We ask them to use sunlamps or to get out in the sun for a fair tan prior to and during shooting. Sometimes they had to shave again late in the afternoon, or we covered the beard with a bit of base. If there was a little blemish—what of it?"

Daniels' credo obviously influenced the make-up situation, for no make-up was used on the men performing in "Can-Can", and they all looked fine. To compensate, however, it was necessary to use a much darker base on the women than usual—a shade that is normally used for men. But the dark base was flattering to the girls because it made their teeth and the whites of their eyes appear much whiter. It is safe to say that Shirley MacLaine has never looked more attractive on the screen than she does in this film.

Having worked in the Todd-AO process for the first time for "Can-Can", Daniels is very much sold on the process. He likes the large 65mm negative which gives about four times as much information on the frame as 35mm. The resolving power is consequently increased and a much sharper picture results on the screen.

"Of course, as in any wide-film process, you have to use longer focal length lenses having far less depth of field," Daniels observes, "but we control this by using more light and stopping down. You have to be careful in staging because of the splits in planes of action. You can never shoot with critical focus on one of a group of two or three people because they are not all in the same plane—so every shot (except a closeup of one person) becomes a split-focus shot.

"I never arbitrarily select a stop, although I might aim for a particular one as an idea. On the set we usually establish the problem and then refer to our depth-of-field scales. From these we determine what aperture is necessary and how much light is called for. If the scene as planned is beyond the limit of the available light units, or where it demands more lights than makes sense, then we arrange for the action of the scene to be changed to meet the depth requirements. All of the directors I have worked with have been willing to do this. They are intelligent men who know that there are certain things a lens can and cannot do. New lens designs and faster films are helping a great deal to minimize this problem in wide-film photography."

Daniels, who won an Academy Oscar several years ago for his black-and-white photography of Mark Hellinger's "Naked City," has a long roster of recent outstanding films to his credit. His suggestion that "Cat on a Hot Tin Roof" be shot in color created a controversy since no one had ever dared film a Tennessee Williams vehicle in color before, believing that color would ruin the mood. The picture, a great commercial success, also won Daniels an Academy nomination last year. Since then he has photographed "Some Came Running," "A Hole in the Head," "Never So Few," "All the Fine Young Cannibals," and "Oceans 11." But it is "Can-Can" that will probably win him his second Oscar. ■

FILMING A WHALE HUNT IN THE ANTARCTIC

Continued From Page 291

neared the catcher ship, we were told that we would have to jump between the two vessels.

We managed to make the perilous leap, but nearly lost some of our film overboard when a package slipped from one of the men's fingers.

The moment we landed on deck we knew that our work aboard this vessel was going to be rough. The ship was rocking in a drunken 40 degree arc. We easily imagined what it would be like when the ship got under way.

Because of this constant pitching and rolling, a tripod proved to be a useless piece of equipment. Also, the deck vibrated too much to provide a solid base even for the inboard shots. Thus, we had to hand-hold the cameras and take up as many of the shocks as possible with our bodies.

Trickiest scenes to make aboard the catcher ship were those of the gunner firing his weapon. We could never be sure just when a whale would sound close enough for him to get in a good shot. After missing several times, we learned to start our cameras every time he gave the slightest hint of shooting. We used up yards of film on false starts, but we got the footage we needed.

We found that whales, despite their average 65-foot length, were elusive targets both for us and the gunner. The mammals would come up with a rush to breathe and then dive again within seconds. To make shots of the whales sounding, we had to move out to the bow platform beside the gunner. From this vantage point we were able to shoot without obstruction.

Here the Bolex camera's reflex system, improved with addition of a Pellegrini-Piek dual-power viewer, proved invaluable. Maintaining sharp focus was a constant problem, because it was not easy to estimate distances in the open sea. But the magnifying viewer provided us with an enlarged image which we could easily check.

Although we did not always need them for photographic purposes, we kept skylight filters on our lenses at all times to protect the lens surfaces from stray drops of water or, as when shooting in the factory ship, from splashes of whale's blood. We found it much easier to remove moisture from the filter than from the lens.

We discovered also that if we had to step briefly into a cabin, condensation would occur on the filter, but not on the elements of the lens beneath. The filter acted as a sort of insulating cap which prevented the air inside from warming too rapidly.

Because earlier we had shot several sequences for this film in the tropics, we had not drained and replaced the

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oil in our cameras. Later, in the colder Antarctic weather we frequently held the cameras inside our jackets to prevent them from freezing.

When we had filmed several complete whale hunts, we moved back to the factory ship and finished our coverage there. But we still lacked needed shots of the ships taken from the surface of the water. We needed these scenes badly for cutaway material.

On the day before we were scheduled to start back to Japan, we managed to wangle a ride in one of the small shuttle boats. After I had shot several scenes and was ready to quit, I noticed a catcher ship moving on a course across our bow. It was heading under full helm and sending up sheets of spray.

Hurriedly I wound the camera, checked the lens and pressed the starting button. I allowed the ship to make a clean entrance into the frame and held it centered for several seconds before it passed beyond us. With this scene on film the closing shot of our movie was in the can.

On the 25-day voyage back to Japan we had time to review some of the things we had learned about photographing whaling in the Antarctic.

The light was often brighter than we supposed. The only way we were able to determine the correct exposure for every shot was by using a meter, for it was impossible to detect by eye the subtle light changes which occurred from minute to minute.

We had to tie each piece of equipment around our shoulders most of the time we were at work in order to have both hands free as we moved about, to guard against possible falls. While shooting we had to brace ourselves against whatever support we could find and loop our arms around stanchions to keep our balance.

Moisture caused us more trouble than the cold. We had to spend several minutes out of every hour, wiping our equipment. We cleaned the lens filters constantly. A water-tight case, similar to those used for underwater photography, would have solved many problems.

Although we had intended using the footage we brought back for a lecture film, select scenes are scheduled to be shown on Japanese television as soon as editing can be completed. ■

SPACE-AGE—NEW CHALLENGE FOR CINEMATOGRAPHY

Continued From Page 289

Mitchells, and with 35mm Eyemos. More specialized cameras having time register devices, are used for engineering sequential coverage. These include the 16mm Milliken, 16mm and 35mm Fastax, 16mm and 35mm high-speed Mitchells, and huge 35mm and 70mm IGOR and ROTI tracking telescopes.

The various cameras are set up and operated by RCA cameramen who are contracted to the Air Force for this operation. The Air Force, of course, has its own film production personnel—the 1365th Photo Group, from APCS headquarters in Orlando, Florida—that photographs special reports on film.

Today, missile contractors have men like the author functioning as Photo Coordinators, whose job it is to direct and coordinate all the filming activities of the Air Force, Army, Navy, and of the NASA missiles program, which includes the Thor, Thor-Able, Juno, Polaris, Atlas, Titan, Saturn, and others. The coordinator's filming assignments vary from the test site arrival of a "Space Bird" to the documentary alert and footage of a launch or static test.

The footage obtained from these assignments provide accurate pictorial data of a missile launch for engineering groups, and military and government agencies. Much of it goes to make up contractual quarterly reports, monthly "inputs," and special motion picture releases shown to the public.

Some missile contractors utilize the medium of single-system sound film, produced with the aid of Auricon 16mm cameras, to provide comprehensive audio-visual reports of a missile pre-launch or a launching operation at the Atlantic Missile Range. The filmed reports are then flown to the west coast where Air Force Ballistic Missile Division officials and missile contractor engineers screen them. These reports, in picture and sound, make it unnecessary for officials to travel back and forth across the country to witness missiles in operation, and at the same time bind east and west coast offices into a more effective technological entity.

Thus we see motion pictures, which achieved their initial success as the world's leading entertainment medium, advancing to still greater importance by serving our government in its most formidable undertaking—the conquest of space. ■

RYDER SYNC DRIVE

Continued From Page 293

drilling through the camera case to make connection with this shaft—can be adapted to use the Ryder Sync Camera Drive. The latter, as previously stated, is essentially a tiny generator and has no motor of its own; it is driven by the camera motor, when attached thereto, or by the camera mechanism—as in the case of spring driven cameras.

Electric motor driven cameras, such as the Arriflex 16 and 35, Auricon 72, 74 and 75, Eclair Camerette 35-16, Mitchell 16, Mitchell BNC-35, Maurer 16, Bolex H-16 Rex, Bell & Howell 70 and 240, and the Cine Special are readily adapted to the Ryder Sync Drive—the device being mounted on the camera motor.

It is possible, of course, to utilize the original quarter-inch tape recording when screening a 16mm picture, for which no sound transfer has yet been made to perforated film, providing that the projector is equipped with a Ryder sync motor attached to the 1440 R.P.M. shaft. (Note that this is a *motor*, a different item than the Ryder Sync Drive). This motor drives the film intermittent only when the projector clutch is disengaged, so that its motor no longer drives the machine, and the sync motor then drives the film intermittent. The regular projector motor continues to drive the takeup and the cooling fan. This method is adaptable to 16mm silent or sound projectors, such as the various Bell & Howell models, which permit disengaging the clutch.

By employing a 16mm magnetic sound projector, such as the Bell & Howell 202, equipped and operated as described above, it is possible to transfer to magnetic-striped picture film picture tracks previously recorded with the Perfectone synchronized by the Ryder Sync Motor Drive on the camera. This method, plus a number of others which the Ryder-Perfectone combination now opens up to the professional film maker, will be described in detail in the five examples which follow:

1) To screen pictures with the synchronized sound reproduced directly from the original tape (instead of re-recording it to film), photograph picture with camera equipped with Ryder Sync Motor Drive, and record sound with Perfectone recorder operating under the Ryder sync-pulse control.

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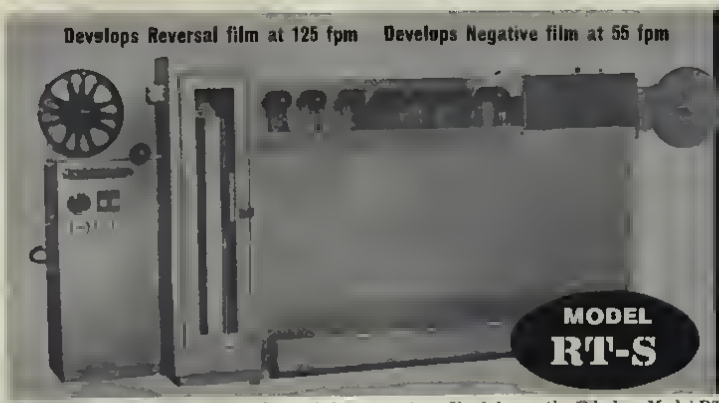

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Screen the processed film on a projector equipped with clutch and sync motor operating under control of the sync signal from the sound tape during playback. By this method "dailies" or "rushes" can be screened with the sound as soon as a processed print is obtained from the laboratory.

2) Photograph and record as described above, then transfer sound from the quarter-inch tape to magnetic-striped picture film in projection sync (sound 28 frames ahead of picture).

3) Photograph and record as in example No. 1, then transfer sound from the tape to magnetic-striped picture film in editorial sync (sound and picture side-by-side). Edit picture film and sound track at same time. Then transfer (re-record) the edited sound track to quarter-inch tape and transfer this to the picture film after striping it for sound—with the picture and sound in projection sync. The original camera film thus evolves as edited picture and sound. In this procedure, it is also possible to add narration, music and sound effects to the original recording.

This method is a simple way to produce an edited "one only" sync-sound film with mixed tracks without resorting to use of multiple tapes and composite printing. It provides single-sys-

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tem simplicity with double-system professional sound quality. Furthermore, it has a distinct advantage over single-system filming in that the picture may be cut at any point in editing without damaging the sound track—since the latter is side-by-side with the picture.

4) A fourth method is to shoot the picture and record sound as in example No. 1, then transfer the sound to sprocketed 16mm magnetic film for editing. Edit sound and picture films side-by-side. Then transfer the edited 16mm sound film to the edited picture after it is striped for sound. The sound may also be transferred to an optical track for use in the production of composite sound-and-picture prints.

5) Shoot the picture and record the sound as outlined in example No. 1, then transfer sound from the tape to sprocketed 16mm magnetic film. Edit sound and picture side-by-side. Screen picture and sound, using the "preview" method of running both films locked together in sync in a modified 16mm sound projector. Such a method was described in the April, 1960, issue of *American Cinematographer* ("A Sound System For Sixteen-MM," Pg. 244).

This method includes a system of changing the synchronization between picture and sound during reproduction. Thus, sound can be synchronized with the picture, even though no clap-sticks were used at time of shooting.

Not only will the new Ryder Sync Camera Drive and Perfectone quarter-inch tape recorder simplify the production of professional 16mm motion pictures for a wide area of use, but the equipment also simplifies production procedures with consequent substantial savings in production costs.

Because each make or type of motion picture camera presents a different mounting problem, it is necessary for purchasers of the Ryder Sync Camera Drive to send their cameras to the Magnetic Sales Corp. for installation of the equipment. List price of the unit, not including installation, is around $175.00. ■

PANAVISION'S PROGRESS

Continued From Page 304

process—and both scenes then projected, one following the other—certain startling differences would immediately be noticeable. One difference is that the Ultra-Panavision method produces no bending or curvature of horizons; water horizons, for example, remain straight. Another improvement affects the perspective of scenic shots. For example, mountains in the distance, photographed in Ultra-Panavision, retain approximately the same height in relation to foreground objects as when viewed with the naked eye. The same scene photographd in a three-camera process, with its wide angle lenses, would produce a diminution of the distant mountains, flattening them out, reducing the apparent steepness and producing a much less dramatic perspective.

When filming in Cinerama or Cinemiracle, as the camera moves gradually in on a large flat object(an ocean liner, for example), the ship begins to bend about a third of the way back from the bow and about a third of the way toward the center from the stern, so that when the ship fills the screen it is bent fore and aft, creating a fudicrous effect. Were the same scene photographed in 65mm for Ultra-Panavision extraction such distortion would be rectified; no matter how closely the camera approached the ship there would be no bending of lines on the screen—result of the scene being photographed with a single lens having a single perspective.

Take a scene in which two people appear, one on either side of the screen, and they begin to walk toward each other. The only way they can be made to appear to meet, using a three-camera process, is to direct the actors to walk along paths which are at an angle to each other. In other words, they must move in false perspective along false lines. In a recent Cinerama production this problem became so acute that special sets had to be built with curves and bends to rectify the false perspective inherent in three-camera systems. Three-strip extracts produced by the Ultra-Panavision method are projected in exactly the same manner as those produced by three-camera systems—but lines do not bend, horizons are straight, close-ups are natural, and when people walk toward each other a perfectly realistic effect is achieved by directing the scene as it would be staged for any conventional cinematographic process.

The Ultra-Panavision extract method has other important technical advantages resulting in much smoother presentations. In Cinerama and Cinemiracle, three separate strips of film run through three separate cameras having three separate movements. It is technically impossible to adjust these movements so that they are *exactly* the same. Even slight differences are greatly magnified on the huge screen, producing an inevitable jiggle between the three panels. Since the Ultra-Panavision negative is photographed in one camera with a single movement, this problem is eliminated.

One of the greatest advantages of the Ultra-Panavision extract method becomes apparent in the developing and printing of the three final 35mm strips that go to make up the complete picture. A serious problem in the three-camera system has always been the struggle to get an even match of color tones and densities between the separate panels. The difficulty again lies in the fact that three separate strips of negative must be used. Even though film having the same emulsion number is used in all three cameras and constant control is maintained in the developing process, a certain variation in color tone and density is almost unavoidable, especially in scenes which include a great expanse of sky.

There is no such problem with the Ultra-Panavision method because the entire original frame of the picture is on one piece of film and receives the same uniform development. Since only one lens has been used in shooting the frame that becomes three segments, there is no necessity to compensate in printing for slight differences in light transmission as when processing negatives produced by three different lenses of three-camera systems.

Panavision's system also offers important economic advantages to the producer in the phases of editing and exhibition. Instead of having to make three separate strips of work print for editing, a single 35mm print-down work print is made from the 65mm negative. Thus, editing can proceed at the same rate as with a conventional 35mm feature. The same marked work print can also be used for scoring and dubbing, making it

unnecessary to become involved in the expensive and cumbersome 3-strip phase until after the negative has been cut and the answer print is about to be made.

Features photographed with three-camera systems can only be shown on a first run, roadsbow basis in the few theatres that bave special (and extremely costly) triple-projection set-ups. The difficulty of producing a smooth composite of the three panels on a single film precludes a second run on conventional equipment, thus denying the producer any further revenue. Features produced with the Ultra-Panavision extract method, however, ean enjoy a roadshow run with 3-strip projection, and ean also be printed down to 35mm standard or in anamorphic aspect ratios for profitable second runs in general theatres. The economic advantage to the producer is enormous.

It is also with the producer and his budget in mind that Panavision has designed and built a new series of light-weight, compact 65mm cameras, together with a whole new series of lightweight lenses (both anamorphic and spherical) in a wide range of focal lengths to fit these cameras.

The cameras originally used in the Panavision 65mm processes for photographing "Ben Hur" and "The Big Fisherman" were outsized, heavy machines which, because they did not have silent movements, had to be housed in cumhersome blimps that weighed 300 lbs. minus the camera. As a result each new set-up was a major project—difficult, time-consuming and expensive.

Two of the three new Panavision 65mm cameras, designed and built completely at the Panavision plant, are very similar in size and weight to present studio 35mm cameras. They are extremely versatile, operate quietly without the need for cumbersome blimps, and can readily be set up and moved around with speed.

The first of the new Panavision 65mm series is a self-blimped camera similar to the regular stock Mitchell BNC in size and appearance, but incorporating several features unique in camera design. It is engineered to run so quietly that quality sound can be recorded with the mike right next to the camera. Its outstanding innovation is an entirely new type of movement designed by Panavision

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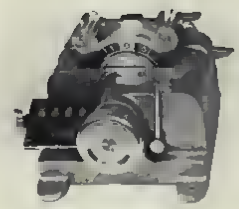

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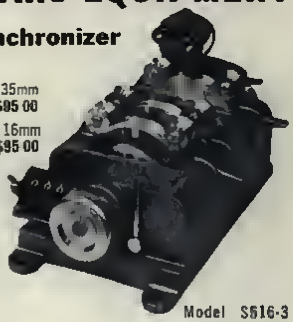

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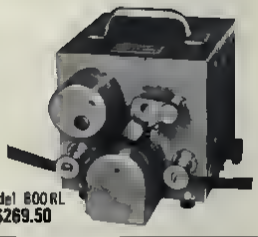

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CAMERA EQUIPMENT CO., INC.
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engineers, which includes a 200° shutter—a feature that has heretofore never been available in 65mm studio cameras. The advantages of a 200° shutter are twofold: (1) it permits the cinematographer to stop the lens down farther with a given amount of light, insuring a greater depth of field, and (2) it greatly reduces "cross-screen strobbing"—a phenomenon which occurs when large, sharply-defined objects move across the screen so rapidly that there is a considerable span of movement between each individual frame. This effect is especially disturbing on larger screens where definition is sharper. The 200° shutter opening allows a greater amount of blur to show on the edges of moving objects, resulting in less emphasis on the strobe effect. It also allows for smoother panning of close objects.

Another advantage of the new Panavision 65mm camera movement is that it operates in such a way that the film is brought to an abrupt stop with the registration pins fully into the perforations, and the film is stopped before the shutter opens for the exposure. The shutter opens and closes *completely* before the pins start to withdraw; then the claws pull the film down, insuring a steady picture on the screen.

Panavision has also developed what it calls its "standard" 65mm camera, which is similar to an NC. It has a silent movement and was designed to be used in conjunction with the self-blimped model when two cameras are required on the scene. It is also so designed that, in the event that anything happens to camera No. 1, it is possible in a matter of minutes to remove that camera from the housing and substitute camera No. 2.

Still another (and perhaps the most revolutionary) 65mm camera model produced by Panavision is a hand-held model with a hand-grip and form-fitting shoulder support. Carrying a 500 foot magazine, it is extremely compact in design. The camera with magazine and motor weights a mere 24 lbs. The motor operates from a lightweight wet- or dry-cell battery pack.

While the most interesting feature of the camera is that it actually can be hand-held, producing a steady image under the most difficult conditions—its greatest advantage to the cameraman is that its extreme light weight and compact size permit it to be quickly set up in positions where other cameras could not be used. Let us consider, for example, a scene that must be shot from an almost inaccessible spot—like the top of a tree or telephone pole, the mast of a ship, or the front of a small rowboat. To shoot such a scene, even in 35mm, with a camera of the NC type would require a great deal of time spent in rigging and in many cases the shot could not be made at all.

The small portable 65mm Panavision camera can either be carried up to the remote vantage point and hand-held by the operator, or it can be quickly mounted with a clamp and tripod socket. It permits easy shooting in 65mm from cars and other moving vehicles and can be quickly rigged for automatic shooting by means of remote switches. When not actually used as a hand-held camera, the pistol-grip and curved shoulder-brace are readily detachable so the camera can be mounted on a tripod like any standard studio camera.

All three of the new Panavision 65mm cameras are being used for the first time in photographing Otto Preminger's production of "Exodus," which is currently shooting on location in Israel. To complement the new cameras the company has created a whole new series of lightweight anamorphic and spherical lenses, the new widest angle lens having an undistorted angular field of well over 100 degrees.

The Auto-Panatar lens, which won an Academy Technical Award last year, is a taking lens for 35mm anamorphic photography. Extremely sharp and completely free from distortion even in the closest closeups, the Auto-Panatar series has already been used in many feature productions.

A final Panavision achievement, which bids fair to revolutionize 35mm anamorphic photography of night sequences in color, is the new Ultra-Speed Panatar lens with its incredible speed of f/1.0. Available in 50mm focal length it permits, for example, photographing scenes in front of a lighted store window with moderately fast film using little or no auxiliary lighting. Director of Photography William Daniels, A.S.C., one of the Auto-Panatar's most enthusiastic boosters, reports that he shot a night street carnival with this lens and the old-type slow-speed Eastman Color negative

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There are other new designs on the drawing boards at Panavision, including a new ultra wide-angle anamorphic lens for 35mm photography, a 35mm anamorphic lens which will include the *zoom* feature, plus other new optical and photographic devices, about which it is too early to talk. ■

PHOTOGRAPHIC ASSIGNMENTS

Continued From Page 280

MACK STENGLER, ASC, "Leave It to Beaver"* (Gomalco Prods.) with Barbara Billingsley and Hugh Beaumont. Norman Tokar, director.

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ELLSWORTH FREDRICKS, ASC, "High Time" (C'Scope & Color) with Bing Crosby, Fabian and Nicole Maurey. Blake Edwards, director.

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HAROLD STINE, ASC, RALPH WOOLSEY, ASC, "Bronco"* with Ty Hardin.

J. PEVERELL MARLEY, ASC, WESLEY ANDERSON, ROBERT HOFFMAN, "77 Sunset Strip"* with Efrem Zimbalist, Jr.

RAY FERNSTROM, ASC, J. PEVERELL MARLEY, ASC, EDWIN DUPAR, ASC, WESLEY ANDERSON, "Colt 45"* with Wayde Preston.

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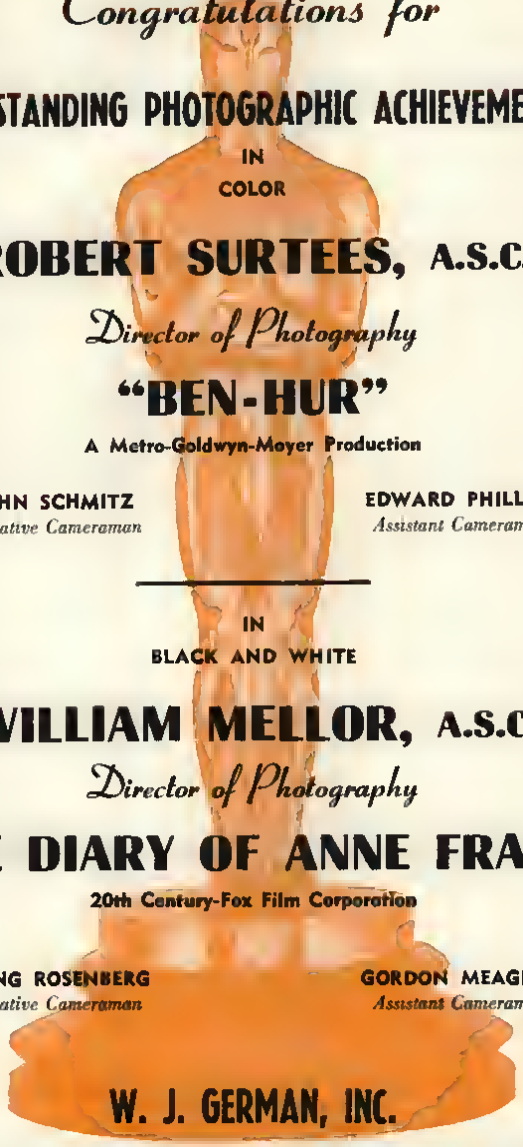

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